MANAGEMENT OF HUMAN BEHAVIOUR IN DISASTER

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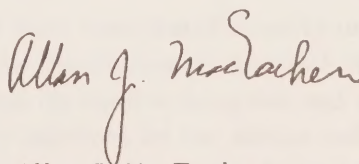Deputy Minister of National Welfare

FOREWORD

The Department of National Health and Welfare has recognized the need of a manual on the management of human behaviour in various disaster situations, for the use of health personnel and others involved in emergency measures planning.

The purpose of the present manual is to acquaint the reader with the kinds of individual and group behaviour that may be expected in peacetime and wartime disasters, or other emergency situations, and to suggest ways of dealing with such behaviour.

This Manual has been prepared by Dr. Horace D. Beach, Professor of Psychology, Dalhousie University, under contract to the Department of National Health and Welfare.

It will be noted that certain sections of the manual are printed in smaller type. These sections will be of interest primarily to the emergency planner and the student of human behaviour. The general reader however, will find much useful knowledge and information therein.

First editions may not be entirely satisfying in every respect; the virtues and shortcomings of the first edition of this manual will become apparent through use. Comments and suggestions that would permit an improved second edition at some future time are invited from readers and users of the manual. They should be addressed to the Public Health Consultant, Emergency Health Services, Department of National Health and Welfare, Ottawa.

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PREFACE

This book was written at the request of the Department of National Health and Welfare. It is directed primarily to those citizens who are responsible for dealing with disasters or emergency situations in our society. This is a broad audience, covering civic officials and government representatives, educational and community leaders, as well as members of those protective, service, health and welfare agencies whom we ordinarily expect to help in emergencies—such as medical personnel, firemen, the police, the Armed Forces, the clergy, the voluntary agencies and welfare organizations. The objective is to provide readers with reliable information about what happens in a disaster, how people behave, the kinds of problem that arise, how problems can be managed, and how planning and preparation can reduce casualties and suffering on the one hand and facilitate recovery on the other. The rationale is that if we know what to expect in an emergency, we will experience fewer surprises and less shock, and we can plan and prepare for the situation.

The material for this book has been drawn from a large number of investigations of natural disasters, of the bombing of cities in World War II, and of the nuclear explosions over Hiroshima and Nagasaki in 1945. Human behaviour is sufficiently consistent in such different emergencies that we can predict, broadly speaking, how people will react in extreme situations. This fact enables us to formulate a number of general findings together with the lessons they suggest. On the other hand, the details of behaviour and problems generally vary with particular circumstances. This means that precise prediction requires detailed knowledge of the special conditions in which behaviour occurs. Because such detailed foreknowledge is seldom available, and because there is still much to learn about human behaviour under stress, we would not be justified in spelling out prescriptions for the management of human behaviour in disaster. Thus the approach has been to describe people's reactions, to discuss the different principles and conditions which underly particular kinds of behaviour, and to offer guidelines for dealing with problems. This leaves the necessary room for experience and judgement in the utilization of the information.

This book is based on the work, research and ideas of many others, especially the social scientists who have done systematic studies of human behaviour in energency situations. I would like to acknowledge my general debt to these dedicated men and women.

A number of colleagues in the social sciences have contributed directly to the conception, content and style of this work. Craig M. Mooney of the Department of National Health and Welfare was generous with counsel and encouragement from the book's inception and offered invaluable suggestions after reading an early draft. I am greatly indebted for the advice and assistance of three men who were colleagues in the investigation and reporting of the Springhill mine disaster, George W. Baker of the National Science Foundation, Rex A. Lucas of Toronto University, and Robert J. Weil of Dalhousie University. William H. Gaddes of Victoria University and Ernest G. Poser of McGill University read the manuscript from the point of view of the behavioural scientist who has not specialized in disaster studies. They offered valuable suggestions, which have contributed to the style and clarity of the presentation. F.C.R. Chalke, the Chairman and Members of the Defence Research Board Panel on Psychiatric Research read the manuscript and contributed suggestions that were particularly useful for improving the organization of the material. I was also

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INTRODUCTION

Summary

Canada has suffered a considerable number of disaster, from floods, fires, hurricanes, major transport crashes, and explosions, to an earthquake that changed the course of a river; accidents take the lives of thousands of Canadians each year and cause millions of dollars worth of damage; and Canada is becoming more vulnerable as the population increases and becomes concentrated in cities— several of which are in areas susceptible to earthquakes. It is important to face the possibility of emergencies, including nuclear disasters, because an emergency prepared for ceases to be an emergency. Recent studies of disaster have dispelled a number of misconceptions about how people behave in extreme emergencies: panic and irrational behaviour are rare in disasters, looting is a minor problem in most disasters, survivors are not reduced to a helpless and dependent mass, survivors seldom think only of their own welfare, and disasters do not produce mental illness. Although a disaster produces social chaos and much suffering, fear, and anguish, the survivors usually demonstrate a great capacity for endurance, mutual aid, and recovery.

Disaster Strikes

On the morning of December 6, 1917, the city of Halifax was devasted by the greatest explosion in history to that time. Some 225 tons of high explosives in a ship in the harbour blew up. Three hundred acres were leveled, over 2,000 people were killed, 6,000 were injured, 200 were blinded, and 10,000 were rendered homeless—out of a population of 50,000.

It was like a small atomic explosion. Suddenly and without warning a giant mass of flames shot high in the air and a tornado-like blast wave which uprooted trees, snapped poles, stopped trains, threw cars and people about like chips, collapsed houses, and filled the air with flying debris and glass. Within minutes the whole area seemed to break into flames as innumerable fires started up. The explosion created a tidal wave six feet in depth, which swept over the piers and embankments into streets, drowning nearly 200 people. To add to the catastrophe, freezing rain, thunderstorms, two blizzards with 17 inches of snow, and zero weather descended on the prostrate city in the four days following the explosion.

The social system which cares for the usual needs and crises in a community's life, such as accidents, deaths, fires, traffic problems, and the provision of supplies and utilities, was completely disrupted in Halifax. Some of the key people for such emergencies were killed—the Fire Chief and his deputy were killed by the explosion. The disaster created a great overload of emergency needs and problems and there were not nearly enough doctors, nurses, medical supplies, food, clothing, shelter and transport. Moreover, the widespread destruction, the complete disruption of communications, and the extreme urgency of all problems made for utter disorganization.

Under such conditions it might have been expected that people would 'panic', go to pieces, and behave in a very disorganized and irrational manner. However, as in nearly all disasters, most of the people kept their heads. A city comptroller assumed command of the fire brigade and the city firemen remained at their posts. Survivors freed themselves from smashed buildings and piles of rubble, they rescued and cared for the injured, they sought out and cared for their families, and they took on various tasks throughout the emergency period. Indeed, most of the people behaved in a heroic manner, with an exhibition of hard work, sacrifice, and incredible endurance. People who were themselves seriously injured worked with the others. There were many instances of men who worked for five days without a break. The general mood and practice was one of helpfulness and mutual aid. Cafes served luncheons without charge, drugstores handed out medical supplies, businesses released their clerks to assist in rescue and relief work, and relief poured in by road, rail, and sea. As an illustration of the spirit of helpfulness which prevailed, nearly one thousand offers for the adoption of orphaned children were received.

As in many other disasters, the Army and the Police were the first organizations to move in and provide a skeleton social system to carry out emergency tasks of rescue, care and treatment, transportation, protection of property, and of distribution of food, clothing, and other supplies. They were soon joined by the local Red Cross, the Salvation Army, a quickly formed Citizen's Relief Committee, and other groups. However, for the first few days the efforts of these groups were relatively uncoordinated and inefficient. The Boston unit of the American of the

American Red Cross, with its history of experience with disasters, moved in and initiated the establishment of an adequate headquarters and an overall plan of organization. Assisted by the Public Safety Committee of Massachusetts, this resulted in an immediate increase in coordination and efficiency.

The personal behaviour and experiences of the survivors of the Halifax explosion illustrate some of the ways in which people react to disaster. At first there was widespread shock among the survivors. They were stunned and overwhelmed by the catastrophe; their facial expression was that of blank immobility, sometimes lined with terror; they appeared to be in a daze as they freed themselves from the ruins and helped others; they showed little or no reaction to the pain of their own injuries; there was very little weeping or crying, and they showed little emotional reaction to the scenes of destruction and suffering about them; they talked very little with one another, but went about the job of helping others in a routine and almost stunned manner, communicating with nods and silent gestures; and some lost the ability to recognize friends and even family members. Nevertheless, a large proportion of the survivors behaved in a relatively rational manner, and worked efficiently and untiringly through the emergency period.

When, one hour after the explosion, the news, or a rumour, was spread that another explosion was likely in the Navy-Yard, the survivors turned and headed southward to the open spaces. Some carried children or bundles of things which they picked up as they fled, many were scantly clad, some in their night dresses, a few stark naked with their bodies blackened with soot and grime. The City was emptied in minutes. When soldiers reported that the danger of a second explosion had passed, many of the survivors moved back into the City to continue search, rescue, and salvage operations.

When the immediate danger had passed, a number of cases of looting were observed. Beer was taken from the shattered breweries; the pockets of a few victims were rifled; articles of clothing were taken. Some days after the explosion, another kind of anti-social behaviour developed, namely, profiteering.

> Landlords raised their rents upon people in no position to bear it....Plumbers refused to hold their union rules in abeyance and work one minute beyond the regular eight hours unless they received their extra rates for overtime; and the bricklayers assumed a dog-in-the-manger attitude and refused to allow the plasterers to help in the repair of chimneys....Truckmen charged exorbitant prices for the transferring of goods and baggage. Merchants boosted prices. A small shopkeeper asked a little starving child 30¢ for a loaf of bread.

When the main shock had worn off and the dead were buried, the survivors began to exibit annoyance and hostility. They resented the professional business-like efficiency and detached attitude of the social service groups which were handling survivor needs; they objected to the card catalogues, forms to be filled out, and to being treated as "cases". There was a great

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[1]From *Catastrophe and Social Change,* by S.H. Prince, New York: Columbia University Press, 1920. p. 51. Used by permission.

clamour for the fixing of responsibility for arresting the culprits. German residents of the City were immediately suspected and placed under arrest.

As usually happens after such a terrifying and stressful experience, many of the survivors were anxious and fearful for some time after the explosion: they were jumpy and sensitive to sudden noises and lights; some experienced emotional upsets; and the population was generally apprehensive — on at least two occasions schools were emptied of pupils whem rumours of new dangers were circulated.

In spite of the numbers killed, the great destruction, and the widespread suffering, Halifax survived. On the whole, the behaviour of the victims was a credit to the toughness and moral character of the people. And relatively few of the survivors suffered long-term psychological effects.

Vulnerability to Disaster

The Halifax explosion was the most devastating disaster to strike a Canadian community. It happened a long time ago, and most Canadians probably have not heard of it. Indeed, we are inclined to think of disasters as things which happen to other people in other countries, in the United States or in Japan for instance. This attitude is part of the general tendency among people to think that calamity will not strike them: "I won't get lung cancer", "I won't drown," "My heart is sound," "I won't have a car accident," In some respects such a feeling and attitude is praiseworthy and may be important for retaining peace of mind and efficiency in every day living. However, it is also to avoid facing facts and real possibilities. It is to avoid taking responsibility for oneself, for one's children, and for one's community. It is rather like believing that the training of firemen for the emergency of fires is not worth the effort. In fact, facing the possibility squarely, knowing what to expect, and having a number of alternative courses of action in mind gives much more comfort than trying to ignore the possible dangers. Moreover, it will often make it possible to prevent an accident, to prevent some of damaging features of disasters, and to manage disaster problems in a way to reduce their effects and hasten recovery.

Canada has experienced a considerable number of disasters, and is becoming more and more vulnerable to them. Explosions in the coal mines of Springhill in 1891 and 1956 took 164 lives. An underground "bump" or shifting of the rock strata in the Springhill mine in 1958 killed 75 men, resulting in closure of the mine and loss of jobs for 1,000 men. The Red River Flood in 1950 forced over 160,000 people to evacuate their homes, did untold damage, and cost over $22,000,000 for flood control and relief. The V.E. day riots in Halifax in 1945 constituted an extreme emergency situation, resulting in two deaths, hundreds of injuries, and $2,000,000 in damage. Although Canada has been relatively free from hurricane winds, their effects sometimes reached into this country, as when Hurricane Hazel killed 81, directly affected 5,455 others, and caused over $24,000,000 damage in Ontario in 1954. The earthquake which struck Cornwall, Ontario, in 1844 caused $2,000,000 worth of damage. And there have been innumerable disasters and emergencies of lesser extent: since 1959 provincial or local emergency measures organizations have participated in the handling of 120 natural disasters from coast to coast, involving fires, floods. explosions, blizzards, and major transport crashes. In addition, accidents took the

lives of 10,564 Canadians during 1964—and accidents assuredly qualify as emergency situations. Indeed, death by accidents were outnumbered only by those due to diseases of the heart, circulatory system, and cancer.

Although Canada has suffered more disasters and emergencies than is generally realized, this country has been fortunate compared to many others. In the United States there are between 200 and 500 tornadoes and from 3 to 5 hurricanes a year, resulting in over 300 deaths and about $200,000,000 damage per year. Floods cause about 80 deaths a year and $500,000,000 in damage. Lesser emergencies and accidents account for several million injuries annually, plus untold damage costs.

The United States is probably more susceptible to major disasters because of its special geography, weather, and concentrations of populations. However, authorities agree that Canada is rapidly becoming more vulnerable. The population is increasing and becoming more concentrated in particular areas; individual and community survival and welfare are becoming more dependent on complex technical means of communication and transportation; the individual's means of handling a variety of crises are being reduced with increased job specialization; the maintenance of law and order are less a function of informal social controls and are more dependent on complex and interlocking systems of legislation and authority; and even medical services are becoming specialized to the point where they may be ill prepared to handle the emergencies involved in a major disaster.

Few Canadians have died or suffered loss in earthquakes. However, six of them have occured in Canada in the last 50 years. A major earthquake, about as big as the 1964 tremor in Alaska, levelled the forests around Three Rivers, Quebec, in 1963, permanently diverting the Saint Maurice River below Shawinigan Falls. It was fortunate that there was no concentration of population in the area at the time. But the danger is not past. Indeed seismologists today have designated most of Quebec Province, including Montreal Island, as Zone 3, that is as susceptible to the most severe earthquake conditions. Five major cities are in zones which are prone to earthquakes: Victoria, Vancouver, Ottawa, Montreal and Quebec. Very few people in Canada are aware of and prepared for such possible emergencies. Even in the elementary physical matter of building construction, only a few structures like Place Ville Marie in Montreal are reinforced in a way that would enable them to weather earthquakes; most buildings where large numbers of people typically congregate, like department stores, hotels, and apartments are vulnerable because of their non-reinforced masonry walls. Thus large sections of our population are vulnerable to natural disasters and become more vulnerable by the day.

Another kind of emergency to which Canada has become vulnerable is that from nuclear explosions .To ignore this possibility is either to turn away from the facts much as a child averts its gaze when confronted with a reprimand, or it is to assume we know that it is hopeless and that there is nothing we can do about it. But do we know there is nothing we can do? How can we face our children, and our neighbors, if we have not done all that could be done? This is not to support this or that foreign policy, nor to accept the inevitability of war and nuclear disasters. It is, rather, to face the fact of this possibility, just as we face the fact of the possibility of other emergencies like fire, car accidents, and sudden illness. It is to find out what happens

in minor and in major disasters, to learn how people react and behave, and to be prepared to handle the emergency problems that arise. Man has survived great and small disasters through a long history, and he will survive disasters in the future. The important question is, how can he better face and handle the emergencies that he is likely to meet.

Misconceptions about Disaster

Many popular beliefs about human behaviour in disaster are contrary to fact and may be dangerously misleading. It could well add to the disaster if we were to accept such false notions and prepare to act in terms of them. For instance, a common belief is that people panic and stampede when a disaster strikes. Believing this, we might tend to interpret the seemingly aimless movement of people in a disaster as panic, and might act to stop or redirect their movement. This could precipitate trouble. However, if we realize, correctly, that the survivors are going about the business of search and rescue, albeit without social coordination, we will the better take part in and seek to coordinate this essential first step in recovery. To take another illustration, if officials and organizations believe, in error, that disaster leads to panic, they may hesitate to issue orders to evacuate, or they may train and prepare their resources for handling panic—while neglecting preparation for more important problems. Thus it is important to discredit and correct the misconceptions and myths which have been built up and perpetuated by news stories, fiction, folklore and speculation. Some 150 systematic studies of disasters in the last 15 years, together with intensive studies of civilians under air atack in Worlk War II, have provided facts which question and discredit these myths. Some of the main findings are summarized below.

(1) Contrary to common belief, mass panic, that is, headlong and terror-striken flight, is a very rare occurrence in disasters. Panic occurs under very special circumstances, namely, when a group perceives or believes that the danger is *increasing rapidly* and that the few remaining *escape routes* are being *blocked or closed.* The belief about *increasing danger* and *closing exits* is often a function of misinterpretation of cues, or of rumour. Knowledge of the special conditions which produce panic can enable leaders and appropriately located individuals to anticipate and prevent this kind of mass reaction. This is extremely important because if the conditions for panic do exist and it starts, the consequences may be doubly disastrous.

(2) Looting is a relatively minor problem in most disasters. In actual fact, what can be lost through looting following a major disaster is inconsequential compared to losses from the physical destruction. People have sometimes reported that they "thought" there was looting, but only a few cases have been verified. As with panic, looting tends to occur under special circumstances: when there is *a real or threatened shortage* of food and other supplies; when there is *no continuing danger* from the disaster event, when the devastated *area has been evacuated,* and when *outsiders converge* on the disaster area. Apparently some of what passes for looting is actually souvenir hunting and is not systematic, general, and exploitive in character. More often, survivors of a disaster are preoccupied with their immediate problems and have little time or inclination to think of looting. Indeed, in some instances individuals with criminal records have taken part in search and rescue operations

with no evidence of looting being reported. On the other hand, if the conditions noted above are expected, measures to prevent looting should be taken.

(3)   There are very few instances of a breakdown of moral codes. Shock and the urgency of immediate problems apparently overshadow and inhibit any tendency toward sexual licence, aggression, and such forms of anti-social behaviour.

(4)   Populations which have been struck by a disaster are not a dazed helpless mass. On the contrary, though they be suffering from shock and even injury, they help themselves and indeed perform much of the rescue work. For example, in the first half hour after the White County, Arkansas, tornado, one-third of the survivors were engaging in search, rescue and emergency relief activities (Form and Nosow, 1958). In other cases, nearly all of the search and rescue activity has been carried out by the survivors themselves.

(5)   Disaster victims are seldom reduced to the level of thinking only of their personal survival. Indeed, family responsibilities come to the fore in emergencies, and most people are inclined to respond to the needs of others for help.

(6)   Disaster-striken people generally do not exhibit outbursts of hysteria, screaming and weeping. There are usually a few cases, but they are the exception and can usually be handled without too much difficulty.

(7)   While social organization tends to break down because of the disruption of communications, transport, lines of authority, and because of the urgent concern of survivors for their families, friends and neighbours, an emergency social system is established fairly rapidly. For a time following a disaster there is a tendency for individual and selfish needs to give way to compassion and group needs, and for pride in group accomplishment to develop.

(8)   Emotional and physical reactions are fairly widespread following a disaster, but they tend to be temporary. Thus many people will experience one or more of such things as jumpiness, fatigue, feelings of weakness, poor appetite, difficulty in sleeping, and so on; however such feelings usually pass off within a few days.

(9)   There is no clear evidence that disasters produce an increase in neurosis, psychosis, and such mental illnesses.

(10) Children generally do not cause special problems in disasters, especially if they are not separated from their parents. Their behaviour and emotional reactions are largely determined by the manner in which their parents and those about them react to the situation.

(11) Studies of disaster, war, and confinement support the old Swedish saying that a person can stand three times more than he thought he could, five times more than his wife believed he could, and ten times more than his mother imagined he could. It has been found time and again that in times of stress people can endure much more hardship, deprivation, undernourishment and shock than they had ever thought possible.

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If there is one generalization that does apply to the behaviour of most people is disaster, it is that although they experience shock, fear, and feelings of inadequacy, they tend to behave in a reasonably rational manner and to handle the immediate problems with a good sense of responsibility. This is illustrated in the following quotation from an interview with one of the survivors of the Flint-Beecher tornado:

> We had just finished dinner. My wife was washing the dishes and I started to take a nap. I had just started to doze off when my wife said, 'Hey, Tom, com'n over here and look at the cloud.' She sounded kind of scared. As I was getting up I heard a terrible roar. I knew it was a tornado. I'd liven in the South. I grabbed my wife and we rushed for the basement.

> When it was over I looked out and had a lonesome feeling. All the houses around me were gone. Then I saw the Barkers coming out of their house, which was really a wreck. If it wasn't for my wife I would have started running, I was so scared.

> The three Barker children, Albert, Nancy, Mary, and Mrs. Barker were coming out of their house. I went to look for a flashlight, found it and ran over to look at them. I saw they were all right.

> The Jordans, other neighbours across the street, were screaming. They have three little kids. I ran across to help them. Wires were down and sparks were coming out of the wires.

> Irene (Mrs. Jordan) screamed, "Grandma is still in there", just as Grandma Jordan came out dripping with blood. They all came over to our house. I helped Grandma.

> Across the street Leonard Brown was screaming. He was Jo Ryan's boy friend. It's funny, the first thing he said to me was, 'Who are you, identify yourself.' I think he thought that an atomic bomb had hit, and that I was one of the enemy.

> Leonard Brown kept hollering for Jo. I knew Jo was dead 'cause I'd seen her first thing, but I said I'd look for her....

> We saw a headlight, and then a car stopped. I asked the man to take Mr. Ryan and Leonard to the Hospital. The man said, I'm too scared.' I said, "Mister, you're no more scared than I am." He helped me put the mattress Leonard had been lying on in the trunk....

> My wife and I were beginning to get worried about our daughter. We stopped the first ambulance that went by and told the driver to tell our daughter that we were all right. She works at the hospital where she's a nurse. Word never did get to her. She had already left the hospital to come home....

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Davey Ryan, who was 12, got over here. Where he came from and how he got here I'll never know. My daughter had come home and she took special charge of Davey. His sister Jo was dead and his folks were in the hospital....

Then the three of us walked up and down the street to see that no one took any of neighbors' things[2].

The above quotation illustrates how a good many people feel and behave amidst the confusion, urgency, and dangers which prevail after a disaster strikes. There was no panic, because the conditions of *increasing danger and closing exits* did not exist. Suddenly surrounded by a shattered environment, the man had a strange feeling of being alone and was frightened. However, concern for his wife steadied him. The power of family ties was manifested again when he sought to inform his daughter of his welfare, when his daughter came home, and when 12-year old Davey Ryan sought out his family. Leonard Brown was so shattered by the impact that he apparently misinterpreted it as a bombing attack. Survivors actively sought out one another and gave whatever assistance they could; they helped friends and neighbours first, and only later turned their attention to the protection of property. The man with a car expressed feelings of fear and helplessness, but responded to the concrete direction of the respondent. Finally, this man undoubtedly responded particularly well because he had previous experience with tornadoes; he was able to react quickly to a brief warning, to adjust quickly and appropriately to his shattered environment and the urgent problems which he faced.

Prevention and Management of Problems in Disasters

An emergency prepared for ceases to be an emergency. If we know what problems and behaviours to expect, there will be few surprises that will throw us and produce shock. If we have thought out and practised appropriate courses of action, we are ready to deal with emergency problems more effectively. Having knowledge of what to expect and what to do, we will feel anxious, apprehensive, and helpless. Such knowledge will reduce the emotional shock, the casualties, and the problems of recovery after disaster. That this is a general truth had been shown with patients who are about to undergo major surgery: those who before the operation were realistic about the risks and consequences and who had discussed these freely with someone, had a better chance of recovery (Janis, 1958). In another study (Schwartz and Winogard, 1954) it was found that when soldiers who were about to participate in atomic bomb tests were given thorough and detailed lectures about the effects of atomic weapons, they experienced much less anxiety. Studies of cities bombed in World War II and of natural disasters make it clear that deaths and injuries can be greatly reduced when people take appropriate protective measures. Although London was severely damaged by bombing, the number of deaths was not many more than occur in automobile accidents in the United States in a single year.

While it is true that we are becoming more vulnerable to disasters in several important respects, it is also true that our knowledge and resources for handling disasters have been

[2]From Community in Disaster, by W.H. Form and S. Nosow. New York: Harper & Row, 1958. pp. 3-6. Used by permission.

greatly increased. This was well illustrated in the case of Hurricane Carla's sweep over southeastern United States. It was 350 miles in diameter, the eye was 30 miles across, winds ranged up to 300 miles per hour at the centre, and it packed 90 times as much energy as Russia's 50-megaton nuclear bomb. Texas had experienced hurricanes before, and a well-prepared system of warnings and plans for evacuation had been drawn up. The hurricane paused for 48 hours over the Gulf of Mexico before moving inland so that people had adequate warning. Emergency plans were activated by the Civil Defence, Federal, State, and local Governments, the Red Cross, radio, television, newspapers, and other organizations and agencies that might have emergency functions. About one-quarter of a million people were evacuated, to places as distant as 400 miles. The ranchers of Louisiana, having learned a lesson from a previous hurricane, herded an estimated 150,000 cattle to safety and lost only a few. In all, the hurricane killed 40 people and 50,000 cattle, and did one-half a billion dollars worth of damage. However, it was estimated that about 100,000 people would have died had the area not been evacuated. This was a disaster for which they were prepared.

Suggested Readings

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CHAPTER 2

CHIEF CHARACTERISTICS OF DISASTER

Summary

Disaster refers to a relatively sudden and violent disruption of the social system of a community, caused by some external agent or event over which those involved have little or no control. It is a special kind of emergency situation, focused on the community level. All emergencies, individual and social, may be viewed as resulting from a sudden shift in energy input or distribution which requires emergency action to handle. A disaster involves a double-negative shift: the destructive event creates a multitude of small and large emergencies and at the same time destroys and disrupts the community's emergency resources of personnel and facilities. There are ten ways in which a disaster event disrupts behavior and the social system: Death of persons nearby, destruction of homes and property, destruction of essentials like food, loss and disorganization of emergency services, destruction of transport facilities, breakdown of communications, threat and fear, emotional shock, sense of urgency, and the suddenness of the changes. The geographical space involved in a disaster is divided into five zones: total impact area, fringe impact area, filter area, organized community aid area, and organized regional aid area. The time encompassed by a disaster is classified in five main phases: pre-disaster, warning, impact, emergency, and recovery. Individual and social effects and reactions are largely a function of where people are in disaster space and when they are observed in disaster time. A nuclear emergency would produce special problems because of its destructive power, radioactive contamination and fallout, and the fear which these two would arouse. Thus responses to warning may be exaggerated and difficult to control, shock and disaster fatigue may be confused with symptoms of radiation sickness, helpers would probably not converge on the impact area but avoid it, survivors may have to live in shelters because of the danger from radioactive fallout, and the extent of the destruction and casualties would produce more profound and lasting disruption of community life.

Definition of Disaster

The word disaster is commonly used to refer to a relatively sudden and violent disturbance in the life of one or more persons, caused by some agent or event over which those involved have little or no control. The disturbance may involve personal injury, injury or death of loved ones, a drastic and unhappy change in one's circumstances and way of life, or loss of support, job, or property. Whatever the cause and the particular affliction, there is always the common element of extreme disturbance and disruption in the survivors.

Most authorities in the area of disaster research consider the above definition too broad—it would include emergency situations like automobile accidents, suddenly losing one's husband and sole means of support, and so on. In order to focus its meaning on social situations, the term is now reserved for *widespread disruptive effects on the social system* and life of community or of a large part of a community—a community being defined as a collection of people who occupy a common geographical area and who are bound together in relatively permanent and interdependent service and social relationships. In this definition, the focus is not on the disturbance and disruption in the lives of individual persons, but on disruption of the social system which normally functions to supply the needs, to order the relationships, and to handle the ordinary emergencies of people in that community. Moreover, the disaster agent is understood to be an external event over which the people involved have little or no immediate control, such as windstorms, floods, fires, explosions, food or air poisoning, and epidemics of disease.

Like most definitions of complex behaviour and social phenomena this definition has some limitations. It would exclude such important catastrophies as the 1964 football stadium panic in Peru (Blank, 1965) in which between 287 and 328 persons died—the number exact has never been ascertained. It was a major calamity in terms of its impact on thousands of people. However, it was not caused by a large external event; the crowd of 53,000 spectators did not constitute a community in the accepted meaning of the word; and there was relatively little disruption of the general social system following the event. A rather simple chain of events, starting with a disallowed goal and ending with the police lobbing tear gas into the crowd, started a panic-stricken exodus in which hundreds were trampled, killed and injured. It is one of a few instances in which mass panic was clearly the cause of a major calamity. However, although such an event may provide valuable information about human behaviour in an emergency situation, it is more properly classified as a crowd phenomenon rather than a disaster (Westley, 1956).

The 1945 V.E. day riot in Halifax is another example which has some but not all of the features of a disaster. There were at least 2 deaths, hundreds of injuries, an estimated $2,000,000 worth of damage, and the social system in a large section of the community was severely disrupted for many hours. However, no destructive external event triggered the riot or produced the damage and disruption. It was essentially a crowd-produced phenomenon.

Another case which came close to being a disaster was that of the Port Jervis, New York, flood. A large section of the city had been flooded by the rains which Hurricane Diane dumped on the area in August, 1955. This emergency had been handled relatively well by the city's population of 9,000. However, just when the water had practically receded from the streets two days later, a false report or rumour was spread shortly after midnight that the huge dam above the city had broken. Within an hour about one-quarter of the inhabitants had fled, with much confusion and disorganization. Indeed, this sudden mass exodus came close to being a calamity in itself. However, though it occurred within the context of destruction by an external agent, the near panic-stricken flight of a proportion of the community was precipitated by a rumour and not the hurricane as such. Had the exodus caused injuries, loss of life, and destruction, this would ha- have to be attributed to the behaviour of the people involved.

The above three examples represent emergencies in which *threat, frustation* and *rumour* were the precipitating causes, and not some destructive external agent. They were crowd phenomena involving the rapid

spread of fear, excitement and anger, and loss of social responsibility. They were situation in which large numbers of people received wrong information and were mismanaged by the authorities. The net results were assuredly emergencies of extreme proportions, but they were essentially crowd-produced, and Westley's (1956) monograph deals with such phenomena in detail.

Another situation which borders on being a disaster is when mass unemployment suddenly strikes a community. After the 1958 disaster in Springhill, Nova Scotia, which took the lives of 75 miners, the last mine was closed and sealed. Over night nearly 1,000 man were deprived of their jobs and only means of livelihood. In many respects this resulted in a more serious emergency for about 1,000 families than had the deaths and destruction in the mine. However, the emergency was largely an individual and family affair, and did not seriously disrupt the social system. Moreover, the impact of being jobless was gradual because disaster-fund assistance and unemployment insurance cushioned the financial loss for some time. Nevertheless, this instance represents a kind of emergency which affects a great many individuals and families in our society from time to time.

Disaster—A Special Kind of Emergency

It will be evident that there are several kinds of large-scale emergencies which do not qualify as disasters, as the latter has been defined. We could accept the broad definition of disaster, but this would detract from the purpose of a definition, which is to focus attention and to facilitate communication, not to cover everything one can think of. Moreover, the word *emergency* is perfectly adequate to cover all instances of extreme situations. Then the word *disaster* is reserved for special kinds of emergencies, the kind which involve an external event and its widespread disruptive effects on a community or significant part thereof.

Because disasters are relatively infrequent, most people have not experienced one. This makes it difficult to imagine what it would be like, how one would behave, and what sorts of things one could do. However, when it is realized that a disaster is simply another kind of emergency situation, this opens the door to insight and understanding. Most individuals and social groups have had some experience of, or training in, the handling of emergencies of various kinds, from automobile or other accidents, to family crises involving accidents, illness, and even death. We have developed emergency groups and facilities whose primary function is to handle emergencies, such as the police, firemen, physicians and nurses, hospitals, welfare organizations, the Red Cross and the St. John Ambulance, religious organizations, the Armed Forces, and so on. When an emergency situation is too much for the knowledge, skills and resources of the individual or parent, then he typically calls in someone who has more experience with that kind of crisis, whether it be a neighbor or emergency personnel and services from the community. Most communities have the emergency resources and personnel necessary to handle the normal run of emergencies in that kind and size of community. Major problems arise only when the emergency personnel and facilities are reduced or disrupted, or when there is a gross overload of emergencies—and this is usually the situation in a disaster.

A clear conception of the nature of emergencies provides a frame of reference for understanding the problems which arise, in small and large emergencies alike, and provides a basis for predicting what will happen and what kinds of preventive and remedial measures must be adopted. According to Miller's (1964) *general systems behaviour theory* groups, organizations, communities and societies, as well as individuals, may be thought of as living systems which require various inputs from their environment such as food, water, oxygen, stimulation, and information, and must have the opportunity to produce outputs of waste products and of energy as they act on the environment, produce goods, or communicate information. The inputs of energy and information are regulated by the living system in a manner to maintain relative balance of equilibrium of functioning. The manner and rate of functioning of the system or subsystems is controlled by feedback processes. Thus the individual orients and moves himself, or his car, according to information

reaching him through his various senses; a business organization regulated its policies and practices on the basis of its past experience of successes and failures and of projected information about supply and demand of money, labour, resources, and alternatives to the product; a nation-society regulates its action on the international level in terms of information about the results of its previous moves and about the behaviour of other nations. Any disturbance in the feedback processes may lead to "errors" and abnormal functioning, and even to disintegration of the system.

According to this viewpoint, emergencies are situations which involve such an excess or lack of essential inputs that equilibrium cannot be restored by the ordinary adjustive processes, so that emergency measures are called for. Thus the individual who experiences an excess input of alcohol, of force on the bones of his forearm, of disease germs, of threatening information, or of flammable heat in his house, must take emergency measures to handle the crisis if normal functioning is to be restored. In the meantime, the overload on his system may have produced abnormal behaviour and functioning, immobilization due to intoxication or fever, or disorganization because of terror. In a like manner, lack of essential inputs, of food, water, and information may also produce abnormal behaviour and require emergency action to get the relevant inputs. The reaction of a group or a community to too much or too little input follows the same pattern: abnormal functioning, and emergency measures to restore the situation. Thus lack of water in a community may lead to the emergency measure of water rationing and deep well drilling; an unusually large "input" of snow may require emergency measures of transportation, of distribution of food, and of snow removal; or an abnormally high frequency of accidents, illness, or food poisoning will overload and strain the normal functioning of a hospital, and require the adoption of emergency measures such as shortcutting the usual paper work on admissions, setting up cots in halls and nearby buildings, calling in doctors from outside, recruiting housewives who were formerly nurses, and so on.

It should be noted that what is an emergency for a community is necessarily an emergency for a large number of individuals in that community. And an emergency on the community level calls for emergency action on the part of individuals on the one hand and on the part of the whole community on the other.

To handle emergencies, individuals and the community must be able to mobilize emergency behaviour and resources. But where do these come from? *They must be available,* directly or by improvisation. The individual must have some experience or training, knowledge and skills, which he can quickly recall and bring to bear on the situation: he must have some special facilities and resources which he can use, such as an axe, a first aid kit, or diapers for bandages; or he must be able to call on someone else for emergency assistance. If he has no such reserve behaviour and resources, he by himself will be helpless. Fortunately very few people are in that unhappy position. All of us have some skills and resources that could be used in an emergency. The important questions are, how much, and how adequate.

In a like manner, most communities have the emergency personnel and facilities to handle the normal run of individual and social crises. However, if a community is to handle a major emergency, it, like the individual, must have special emergency resources. These include things like communication, transportation, and hospital equipment and supplies, alternative and reserve sources of these; the special characteristics, skills, and leadership qualities of the community members; plans for emergencies which are known and practised; and pre-established relationships with other communities and their emergency resources of personnel and equipment. An organization's or community's ability to handle a large-scale emergency will depend to a large extent on having and being able to mobilize such emergency resources. They make up the community's "capability" for emergencies.

Hass and Quarantelli (1964) have conceptualized the equilibrium which an organization, community, or social system normally maintains as a balance between the demands on the system and the system's capability of handling those demands—demands for goods, services, and especially for emergency assistance. An emergency of disaster proportions amounts to a negative shift in the demand capability ratio within that community such that the capabilities are not sufficient to meet the demands. This shift is usually the

result of a sudden and drastic increase in the demands—especially for emergency personnel and facilities like fireman, doctors, and hospitals, and a sudden reduction in the community's capability due to destruction and loss of emergency facilities and personnel. This is the double-edged sword of most disasters: the energy input of a large destructive external agent suddenly increases the emergency needs of the community and at the same time its destructive fury often sharply reduces the community's emergency resources. The only way to meet such an emergency is to have adequate and alternative emergency resources available.

Disruptive Factors in Disaster

There are a number of ways in which a disaster event upsets the capabilities of the individual and community, with resulting disruption of behaviour and the social system:

(1) **Sudden death or injury** of a family member or of others nearby has a strong emotional impact on survivors and usually calls for some kind of immediate emergency action. Moreover, when communication and transportation facilities are disrupted and the appropriate helping personnel, such as doctors, are not available, the situation is doubly upsetting. Survivors may be, at least for a time, left to handle the resulting emotional, decision-making and action-taking problems on their own.

(2) **Destruction of homes and other property** and personal belongings is a very upsetting experience for the individual. He is suddenly deprived of some of the main features of his environment, things which are necessary for his habitual way of life. This creates an urgent need to salvage and protect what he can, and once more he is more or less on his own for a time, because others are caught up in the same situation and a protective agency, like the police, may not be available to offer its help.

(3) **Destruction of the means of satisfying basic needs,** like food supplies, water utilities, sources of heat, and sanitary facilities constitute a direct threat to the welfare and survival of the individual and his family.

(4) **The injury, death, and disorganization of emergency personnel,** together with destruction of their facilities and resources, deprive the individual of the help that he now so urgently needs.

(5) **Destruction of roads and vehicles** deprives the individual of the means of movement, making it difficult for him to take the injured to a hospital, to get supplies, or to seek the whereabouts of a loved one, all of which have become needs of the highest priority.

(6) **Breakdown of the communication system** is one of the main factors in isolating individuals and groups and in producing disruption of the social system. It is the factor that compounds the strains that other factors produce. A person cannot get in touch with family members and determine their well-being; he cannot communicate his needs to others who might help him; he cannot get a picture of the whole situation and its cause; he cannot ascertain the possibility of continuing danger and thus either be reassured or prepare to take appropriate evasive

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action. The net result is that coordination of the rescue and remedial efforts of survivors is difficult or impossible, so that the situation appears chaotic as each individual seeks to do what he can about the problems that he faces. It should be noted that this seemingly random, aimless, and chaotic behaviour of survivors is sometimes mistakenly called "panic". However, it is not panic. The activity of the survivors may be completely uncoordinated, but each individual is usually acting with purpose as he seeks to do something about the problem uppermost in his mind at the time.

(7) **Threat and fear** also contribute to disrupting behaviour and the social system. When individuals perceive that their lives, their loved ones, and their property are in danger, their attention and efforts will be focused on this possibility and they will be less inclined to pay attention to and to cooperate with others in doing something about the overall situation.

(8) **Emotional shock** presents some survivors from participating in emergency action for at least a few moments. Shock is due to the abrupt and massive change in the environment which the destructive event produces: dwellings reduced to rubble, the streets a tangle of wire and trees, the presence of dead and mutilated bodies, and sound of the injured and dying. Most people are not prepared for this kind of experience, and the resulting emotional disturbance reduces their ability to respond adaptively and to cooperate with others.

(9) **An extreme sense of urgency** is experienced by survivors—to find a family member, to attend to an injury, to get someone to a hospital, or to fight a fire. They can think of little else at the moment and hence are not inclined to join forces with others on some other problem, nor to remember their role and responsibility as a member of, say, the Red Cross. Immediate problems are personal crises, which exclude attention to other matters.

(10) **The relative suddeness of disasters** is highly disruptive. Were the demand capability ratio to change gradually, individuals and groups could adjust to the change in phases. However, when a multitude of individual and group needs and emergencies erupt at once, orderly adjustment becomes extremely difficult.

Each of the conditions contributing to disruption of behaviour and the social system warrants analysis in terms of how it might be counteracted at the time in a disaster situation, or beforehand by preparation and training. It would be a good exercise and test for the reader to pause at this point, and in his own mind or in discussion with others, try to suggest some answers.

Time and Space Characteristics of Disasters

As a means of describing and sorting out the behaviour and functions of individuals and organizations is disaster the area involved has been divided into zones, and the duration of disaster events into time phases. The zones may overlap, as may the time phases, but such a classification enables us to focus on particular events and to plot in an orderly manner the ways in which people react to and cope with disasters.

Wallace (1956) has divided disaster-space into five zones, depicted by the concentric circles in Figure 1. Area "A" is the area of total impact. It is the zone which has experienced the full destructive
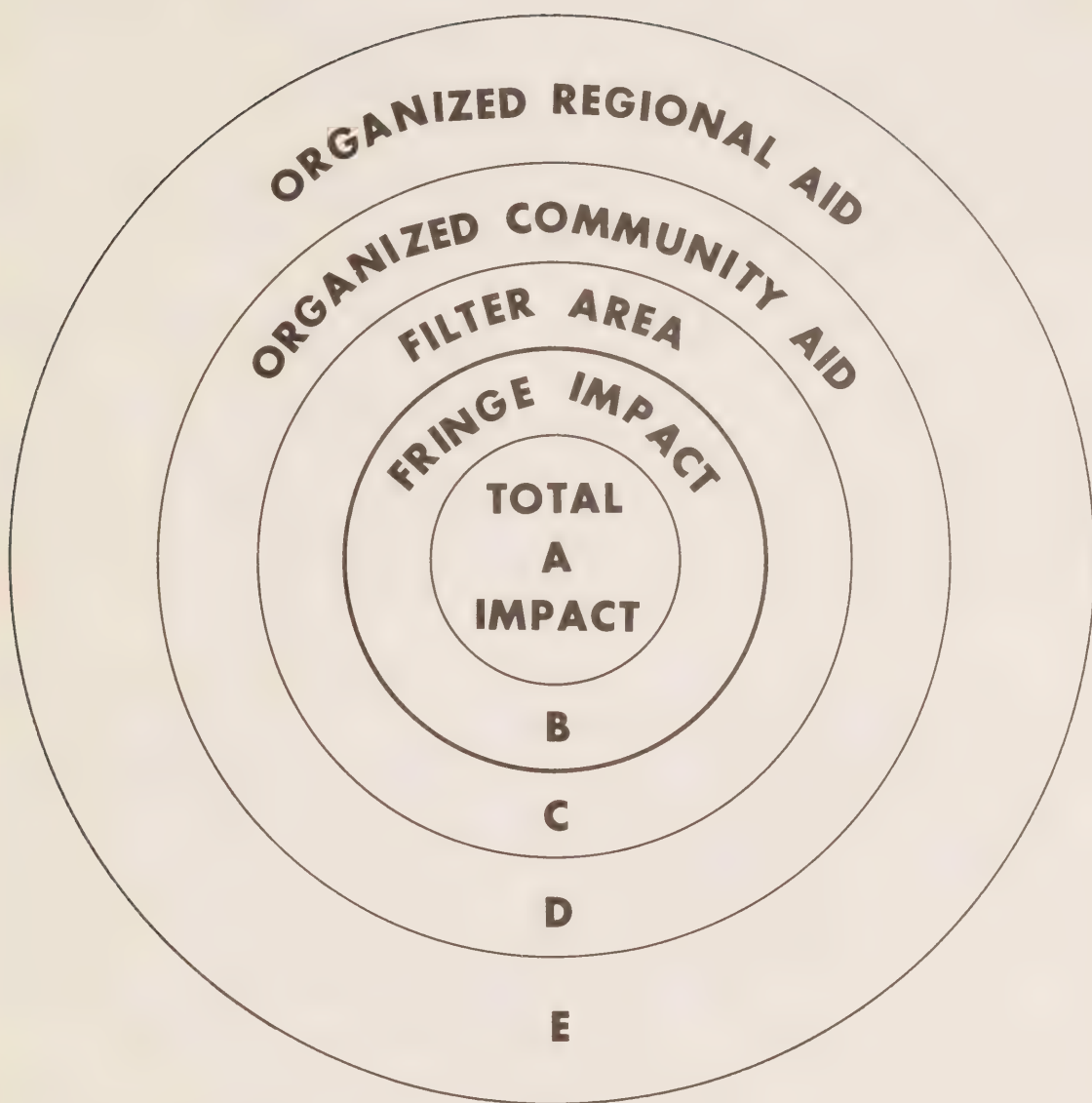
Figure 1. Graphic illustration of zones involved in disaster. (Adapted from Wallace, 1956)

fury of the disaster event. There may not be total destruction in the area, and indeed in some disasters there have been relatively few casualties in the total impact area. However, there is usually much more destruction as compared to adjacent areas. Moreover, the area of impact is usually fairly clear to the victims, as well as to helpers from the outside. The second or **fringe impact area** is closely adjacent to the area of total impact, and is distinguishable in that it usually has suffered only minor damage and few or no serious casualties. In the case of a tornado, it may be one side of a street where the houses have only suffered a few stripped shingles and broken windows while the houses on the other side of the street are reduced to rubble. Some people in the fringe area may suffer from minor shock. Their first reaction following impact is usually to check their families, after which they may investigate the impact area and begin rescue work. If the impact area is a continuing source of danger (e.g., from fire or flooding), they will evacuate their families. The third or **filter area** is the next adjacent area, which has suffered no damage or casualties. It is typically a source of help and services as well as the area through which traffic and information must pass back and forth from the impact area to the outside world. The fourth and fifth areas, or **organized community** and **regional aid areas**, are not directly affected by the disaster but are the primary source of organized emergency personnel and services—in the form of police and fire departments, medical and hospital services, and relief agencies.

The various areas which become involved in a disaster are seldom if ever neat and circular as illustrated in Figure 1. The total impact area may be a straight-line swath through a community as when a tornade cuts a path down several streets. The fringe impact area will be closely adjacent to this, but the filter area will tend to be a number of nearby sections, concentrated around roads and other means of access to the area of total impact. The area of organized community aid will most probably involve a number of areas nearby where there are organized community resources for dealing with emergencies. Organized regional aid may come from distant parts of the country, and even from other lands—Red Cross units from the United States moved in to assist after the Halifax explosion disaster, and financial aid has typically come from all over the North American continent as well as from Europe. Thus a realistic picture of disaster-space would reach out to any community that is a potential source of assistance.

The reactions of people in the different zones of disaster space is also a function of the particular time phase in which they happen to be observed. Five major time phases have been distinguished (Table 1). The first phase, **pre-disaster phase**, is really the period before the disaster. It is included in the scheme because of its importance in determining the effect of, and response to, the disaster. The pre-disaster conditions include such factors as the nature of the buildings in the area, the availability of shelters and communication facilities, the population's previous experience with disasters, and the availability of organized and trained personnel with appropriate resources. Additional factors include such things as the time of day the event occurs, and the chance presence of special services. For instance, the Alaska earthquake in 1964 happened at a time when most people were at home, and hence the response of organizations was relatively disorganized and ineffective at the beginning. On the other hand, a detachment of the National Guard happened to be in the area at the time, thus providing a ready source of organized and specially trained personnel and resources. As another example, the Niigata earthquake in Japan in 1964 occurred when most people were at work, and hence organizational response to the event was maximized.

The **warning phase** in a disaster covers that period from the first appearance of possible danger signs to the moment of impact. It may be subdivided into an early warning or **alert phase**, and a late warning or **threat phase**. The **alert phase** typically involves vague and ambiguous signs and partial information indicating the *possibility* of a disastrous event, at some time and some place. There is no certainty of impact in any particular area or at a particular time, but rather the likelihood that it may happen at a number of possible places. At most, precautionary behaviour is indicated, such as bringing the children home, closing windows, turning off electricity, and preparing to take shelter if the danger becomes imminent. People typically react with anxious scanning and checking for further information and clarification of the situation. The warnings are likely to apply equally to those in the impact, fringe, filter, and even the community aid areas

of disaster-space; in case of nuclear war, the regional aid areas will also be subject to warning. The warning may last for only a few seconds, and then quickly become threat and impact, as when a buzz-bomb or lone plane got through British defences undetected and suddenly appeared over a target city; it may last for hours and even days, which is the case with most hurricanes nowadays, and as was the case when the Cuban crisis of 1962 developed over a period of a week or more; or there may be no warning at all, as when a sudden and unexpected explosion occurs. Warnings may turn out to be false, or true. They may be noticed by a small or large proportion of the population, and they may be taken seriously, or ignored. Because of the crucial importance of the warning period, these and other problems associated with the warning phase will be discussed in more detail later.

The late warning or **threat period**, in contrast to the alert period, involves cues and information which are *not* ambiguour, at least to many people. This phase is usually short, and is followed by impact or by awareness that the danger has passed. Threat cues are typically an urgent indication for immediate protective and survival action, such as lying face down, or retreating to shelters. Even in a nuclear explosion like that which occured over Hiroshima, people had a few seconds from the late warning of a blinding flash until impact of the shock waves, enabling some to take protective action and save their lives. The threat period is usually localized as far as disaster space is concerned. Many persons in the impact and fringe area willbe sure that the event will hit them, while those in the filter, community, and regional areas experience little or no threat.

The **impact phase** is the period during which the disaster agent causes death, injury, and destruction. The force of the destructive agent is usually confined to a particular area, what has been called the area of total impact. People within that area are well aware that they have been hit. Some may be largely immobilized and literally "holding on" as in a tornado, and others may be frantically active as they seek shelter, try to close doors and windows and protect family members. They may have some weird experiences as when the vacuum created by a tornado literally floats heavy pieces of furniture and even people. For instance, in the Worcester tornado (Wallace, 1956) a mother, father and daughter were in the kitchen at the time. Potatoes had been put in the oven for baking a few minutes before the tornado struck. Suddenly the oven door opened, and "the potatoes came out and went over and hit my daddy on the head". Babies have been lifted from a parent's arms and children have floated away from their side.

Impact may last for only a few seconds or minutes, or may be prolonged as in the case of windstorm or flood. People in the fringe area may also think that they have been hit, and indeed may suffer minor injuries and property damage. Some of them may suffer from disaster shock, at least for a short time. People in the filter area will usually be aware that a disaster has occurred and have a fair idea of its location. Not having experienced actual impact, they are unlikely to suffer shock but may be somewhat breathless and excited insofar as they are aware that they were "near-misses". At the time of impact the community and regional aid areas may be largely unaware that a disaster has occurred, and are seldom aware of its precise location. There is typically a time lag before they receive the relevant information which will enable them to mobilize their resources and move in to provide emergency services.

The fourth phase of a disaster is the **emergency phase**. It begins at the end of impact and continues to the time when the dead have been removed, the injured cared for, secondary threats of things like fire and "hot" wires dealt with, and the survivors cared for with temporary shelter, food, and clothing. The emergency period may also be divided into two parts, the **isolation** phase and the **assistance** phase. The isolation phase is the period during which the survivors are on their own. It lasts until organized and professional assistance comes from outside the impact zone, marking the beginning of the assistance phase.

The period of functional isolation, when the survivors are on their own, varies from a few minutes to one or more hours. In a few instances, survivors have been isolated for several days, notably in the case of floods and following the nuclear explosions in Japan in World War II. The isolation period may be prolonged by one or more of several conditions. First, the outside world may lack information about the location and

Table 1

Time Phases in Disaster*

Phases	Reactions and Functions
1. Pre-disaster Phase and Conditions	Emergency resources, training, etc., influencing the effect of, and response to, impact
2. Warning (1) Alert	Precautionary activity; seeking further information
(2) Threat	Protective and survival action
3. Impact	"Holding on"
4. Emergency (1) Isolation	Shock; social system disrupted; survivors extricate, rescue, give first aid, some preventive action vs. fires, etc.
(2) Assistance	Organized and professional assistance, medical care, preventive and security measures, and relief.
5. Recovery	Individual rehabilitation and readjustment, restoration of property and community organization, preventive measures against recurrence.

*Adapted from Killian, 1956; Powell, Rayner and Finesinger, 1953; Tyhurst, 1951; and Wallace, 1956.

condition of the survivors. Second, access to the impact zone may be hazardous and extremely difficult, as it often is following extensive flooding, tornadoes or hurricanes, and nuclear explosions. Third, communities adjacent to the impact zone may be ill-prepared to offer emergency assistance. Finally, a situation may arise in which potential helpers from adjacent areas may fear to enter the impact zone because of continuing danger there, for instance, from radioactive contamination. This might well be the case following a nuclear explosion.

It is the emergency period which presents the most difficult and pressing problems in disaster. For one thing, the social system, that network of roles, responsibilities, jobs, and facilities which is the basis for coordination in meeting the needs and problems of individuals, families, and groups, is usually disrupted and may collapse. Physical destruction may interrupt the supply of electricity and water, destroy the sewage pipes, damage or destroy sources of milk, groceries, and gasoline, or damage the means by which they are transported. Injury and death may deprive the community of emergency personnel like repairmen, firemen, doctors, and so on. Damage or destruction of communication facilities prevents people from calling for or offering assistance and from otherwise coordinating their efforts. Deaths and injuries, and the general fearfulness and threat of the situation make many people turn from their jobs and responsibilities to look out for their own welfare and that of their families. The result is that coordination of activities and of relationships between individuals and groups, together with lines of authority and control, break down so that individuals are for a time, left largely on their own to handle injuries, fears, and other problems of the moment.

The other source of problems in the emergency period is the effects of impact on individuals. Most of them will suffer at least momentary shock, and a proportion may be dazed and otherwise incapacitated for up to hours. At the same time, survivors will not only be deprived of their familiar environment but be confronted with a variety of urgent needs—to save themselves, to help the injured and dying, to look out for the welfare of family members, to search shattered dwellings, and perhaps to report for duty as a fireman, physician, or telephone repairman. Under such circumstances the behaviour of individuals appears disorganized and is seldom characterized by coordination with others. However, although the resulting scene be one of apparent chaos, a great many of the survivors are engaged in purposive behaviour as they free themselves from the rubble, look after family members, and care for those needing assistance. Indeed, the survivors often do most of the rescue work following a disaster, albeit in a uncoordinated, frantic, and rather inefficient manner.

A disaster-stricken area is seldom completely isolated for very long. Friends, relatives, and volunteer helpers, together with emergency personnel from the fringe and filter areas typically move in rather quickly, and in force—in some cases up to 25 per cent of the people in the fringe and filter areas have moved into the impact zone and in effect mounted a mass assault on the emergency problems. Initially these helpers, struck by the devastation and the urgent needs of survivors, and probably also impressed by the fact that they were "near-misses", pitch in to do something about each immediate problem they meet. Thus they forget about their organization roles, like that of fireman or policeman, and instead rescue victims, give first aid, and so forth. The result is that emergency action remains largely uncoordinated as local and adjacent area personnel attack problems as individuals or as small informal groups. For instance, in the case of the Baxter tornado, the Red Cross chapter in nearby Westley had a medical mobilization plan ready in case of disaster, with a registry of doctors, nurses, first aid personnel and community resources, classified by area and availability. But when the personnel were called by phone in order to implement the disaster plan, very few were available. Apparently they has already responded to the radio bulletins and moved into the impact area to work as individuals. As a result, the plan to establish some *organized* assistance and aid never went into effect.

With the arrival of *organized* emergency agencies and professional personnel from outside, usually from the community and regional aid areas, the emergency period enters the *assistance phase.* The agencies include neighbouring police forces, firemen, the Red Cross, the St. John Ambulance, Salvation Army,

emergency health and welfare teams, Civil Defence units, Armed Forces, and others. Each of these usually sets up a headquarters, seeks to determine the nature and extent of the problems and needs, to establish communications with the outside world, and to control and coordinate rescue and relief operations. They initiate systematic search and rescue, account for residents, reunite families, establish a record of casualties, damage and losses, set about establishing control of traffic, distribute supplies, guard property, and remove public hazards. However, this whole operation is generally not very efficient in the beginning. It is hampered by the physical destruction, by lack of communication facilities, by the mass and random influx of volunteer helpers and supplies, by lack of familiarity with the community, and by the inexperience of emergency agencies in establishing coordination between one another. However, some overall organization is gradually worked out within hours, or days at most, and survivors' basic needs of food, shelter and clothing are then handled in a more systematic manner.

The recovery phase following a disaster begins approximately when emergency tasks of search, first-aid, and emergency health and welfare care have been performed, and when survivors have been provided with temporary shelter and housing and necessary supplies of food and facilities. At this point emergency agencies typically turn their authority over to local civic officials. The primary tasks in the recovery period are relief, relocation, reconstruction, and general rehabilitation. As this process goes forward, something much like the original social system is typically re-established. How well and how quickly recovery progresses depends largely on the availability of money, supplies and labour, plus the adequacy of planning and organization. Just when the recovery period ends is difficult to say. Probably a community that has been devastated by a disaster will never be quite the same again. However, when the social and economic system is back to its pre-disaster level of functioning, recovery is complete in the sense that the effects of the disaster have ceased to have repercussions on the remainder of society.

Special Characteristics of Nuclear Emergencies

It could be misleading to classify the emergency caused by a nuclear explosion as just another kind of disaster situation. For one thing, there is insufficient systematic information on the behavioural effects of nuclear explosions to enable us to make such a dogmatic statement. Moreover, the two bombs which were exploded on Hiroshima and Nagasaki were relatively small compared to what might be used in case of the future war. Both of these considerations indicate caution in drawing firm conclusions about the behavioural problems which a nuclear explosion would produce. Nevertheless, available evidence from personalized accounts of the emergencies in Hiroshima and Nagasaki (c.f. Hersey, 1946) and from a survey on morale in those cities three months after the war (United States Strategic Bombing Survey, 1947), indicate that the principles and conditions which determine how people behave and react in other disasters and bombings also apply to nuclear emergencies.

The nuclear emergencies in Hiroshima and Nagasaki differed in two respects from those following bombing in other cities and following natural disasters: First, there was much greater damage and destruction and more injuries and deaths in the former. In effect, this meant a much more drastic shift in the demand capability ratio both in terms of individual and social functions. More of the cities' emergency personnel and facilities were knocked out, reducing the community's capacity to handle emergency problems; and the blast, burns, and radioactive effects increased the problems a hundred fold in terms of dead, injured, destruction, and fires. In Nagasaki, some 16 per cent died and a somewhat larger proportion were seriously injured; in Hiroshima, 30 per cent died and another 30 per cent were seriously injured. Second, the population were almost completely unprepared in terms of past experience or expectations. Both cities were relatively untouched by bombs up to that time; they know absolutely nothing about atomic bombs and their effects; and they were expecting nothing at the time but were if anything relaxed by an all-clear from a previous alert which had sounded but an hour or so earlier. This lack of preparation and expectation together with the suddenness and extent of the impact produced widespread shock in the survivors. Moreover, when people recovered from the shock sufficiently to be aware of their surroundings, they were met with

frightening sights and sounds:mutilated bodies, some black or brownish, some burning, with eyes melted in their sockets, and flesh that peeled off when it was touched; the groans and cries for help; and the sight of a city that had all but disappeared. Apparently this created not only shock but outright terror. In addition, fires were starting up all over the place, as the rubble of houses made contract with stoves and live wires. In the face of these conditions, most of those survivors who were able headed out of the city in a mass exodus.

The flight reaction of survivors was unusual in relation to other disasters which strike suddenly. However, no new principle would seem to be involved. The extreme suddenness and unexpectedness of the event together with the extent of the destruction made the situation especially terrifying.1In the context of war and knowledge of bombings of other cities, the survivors were probably afraid of what might be coming next, especially as darkness descended on the city. To make the location even more untenable, fires were starting up all around. In such circumstances, to get out was a reasonable response.

Available information indicates that other reactions of the survivors, while often extreme, could be predicted from our knowledge of emergency behaviour and from the extreme conditions of suddeness, unexpectedness, and the demand capability strain associated with the bomb. Thus parents almost invariably adopted their family roles and rescued their children and other family members. Apparently many survivors also adopted a helper role and turned aside from their flight to answer a cry for help from less fortunate victims, or to join small informal groups in rescue or fire-fighting tasks. And some assumed their emergency organization roles as physicians and firemen and set about caring for the injured and fighting fires.

Because of the drastic shift in the demand capability ratio, large numbers of injuries and deaths, the widespread destruction of emergency facilities and other goods and services, the survivors were largely without food, clothing, shelter and medical care for several days. In effect, the isolation phase of the emergency period lasted much longer than in most natural disasters. However, while this made for critical deprivation and suffering, it may be attributed to the unexpectedness of the event, the extent of the destruction, and lack of preparation.

The emotional after-effects of the atomic bomb in these cities was essentially an exaggerated version of that which has been observed following conventional bombing attacks on cities in Western Europe. The people suffered from apathy, presumably produced by their great personal and material losses and a dark and foreboding future; acute fear and startle reactions were common, sudden noises like that from a plane or sudden flashes of light would result in a rush for shelters; anxiety-laden rumours were widely circulated, for example, that the atomic bomb had deposited a poison on Hiroshima which could make the place uninhabitable for seven years.

In spite of the extremities to which the survivors of these two cities were subjected, the motivation to return to their homes prevailed and within 24 hours after the bomb exploded, most of them had returned to live amidst the rubble of their home ground. And in terms of recovery, Hiroshima, for example, is a thriving new city today, with new industries, a new university, and nearly double the population it had when the bomb devastated the community.

Although the atomic bomb produced relatively "normal" emergency behaviour in survivors of Hiroshima and Nagasaki, we can expect important deviations from the usual pattern in case of future nuclear explosions. The key new factors are the destructive power of nuclear weapons, health hazards from radioactive contamination and fallout, and people's knowledge and fear of these.

The explosion of presently available nuclear weapons might not alter the essential features of disaster space as described above, at least for a short time. There would be an impact zone, fringe and filter areas, and community and regional aid areas. However, the impact zone from a single explosion would cover a wide area and the destruction would be even more extensive than it was in the two Japanese cities.

Moreover, because such weapons would likely be used on areas with high concentrations of industry and population, facilities and personnel for dealing with the emergency would be seriously depleted—as they tend to be concentrated in the cities also. If many nuclear bombs were delivered with reasonable accuracy, though one might still identify filter, community and regional aid areas, they are likely to contain only smaller communities with less resources of personnel and facilities for dealing with such an emergency. As the dangers from radioactive fallout develop and spread, within hours to days, the filter, community and regional aid areas may be largely prevented from offering what assistance they have available. Finally, the health problems created by radioactive contamination would require more extensive and specialized services than other disasters have. These physical consequences of nuclear explosions must be taken into account in the development and deployment of emergency measures.

Difference in Responses to Nuclear Disaster

Knowledge of the effects of nuclear disasters is likely to alter the behavioural reactions and problems that are associated with natural disasters, in the following ways:

(1) **The response to warning may be exaggerated** and difficult to control. In a number of areas the appropriate response will be to evacuate. If the warning is credible and is accepted as a call to action, evacuation will occur. However, if the people are told, if they believe, or if rumours lead them to think, that time is short, the pressure of fear may result in precipitous flight, without consideration of what they should take with them, of the appropriate routes, or of the possible consequences of an uncontrolled mass exodus. If they also believe that the escape routes are limited or are closing, the exodus could well turn into panic. To prevent such a calamity it would be essential for the authorities to provide accurate, authoritative, and credible information at all times, to initiate evacuation in phases, and to maintain rigid traffic control.

(2) **Early symptoms of radiation sickness may appear** in survivors following a nuclear explosion. These constitute a new and serious consequence of disaster and would call for more than the usual medical and paramedical personnel with specialized equipment and facilities. The problems here will be compounded by the fact that some of the signs of shock are much like radiation symptoms, including vomiting, diarrhoea, lethargy and fatigue, tremor and excitability, and loss of appetite. This will pose difficult problems for differential diagnosis. Moreover, primed with the knowledge and fear of possible radiation sickness, survivors may well tend to interpret any vague symptom as evidence of contamination, thus adding to their overload of fear. In addition, some people are likely to develop various bodily symptoms simply as a response to fear of radiation sickness, adding further to the overload and difficulty of diagnostic problems. Under such circumstances it will be more difficult to reassure and calm victims, and to evoke constructive and coordinated behaviour. Some of the means of dealing with this problem will be presented in the following chapter.

(3) **Knowledge of radiation hazards will reduce the convergence** behaviour which typically occurs after natural disasters. Potential helpers from the fringe and filter areas will probably be concerned to take protective measures for themselves and their families against the imminent fallout and to avoid the impact area. Those who might have converged on the area to

satisfy curiosity and exploitation motives are likely to be deterred by the same fears and concerns. Whether there will be some convergence of materials and equipment will depend on the extent of the nuclear strike and the availability of such resources in outlying regions. Communication facilities are likely to be overloaded as usual, particularly as people from the outside seek information about the damage and about people they know.

(4) **The homing tendency will be reduced** following a nuclear explosion, compared to that observed following war, bombing, and some natural disasters. Insofar as evacuation has occurred prior to the strike, one of the conditions for homing will obtain. However, fear of radioactive contamination will probably make people loath to return. Indeed, one of the problems may be that of getting people to move back into areas even when the authorities have declared them safe.

(5) **The dangers from radioactive fallout may necessitate retreat to shelters** for some time, especially in the fringe and filter areas, and possibly over widely scattered regions. Fear of radiation effects may motivate most people adequately to take such a protective measure. However, some may be difficult to convince because evidence of contamination is not directly available by sight, sound, or smell. Shelter living in itself will pose special problems. However, these can be handled and it is unlikely that people would have to remain in shelters for longer than two weeks, even if the greater part of the country was subject to fallout from numerous nuclear explosions (Glasstone, 1964). The problems of shelter living will be discussed in a separate chapter.

(6) **Mood and morale changes** observed following natural disasters are likely to be altered with a nuclear emergency. The extent of the destruction and casualties will have a more profound and more lasting effect on survivors—as it did in Hiroshima and Nagasaki. Shock will be more widespread, fears of radiation effects will persist for some time. Under these conditions the dependency stage of the disaster syndrome may well be exaggerated and difficult to overcome, and people are less likely to experience feelings of euphoria. Whereas survivors will be faced with the common elementary problems of survival, it is not certain that they will exhibit identification with the whole community and develop a spirit of mutual help and sharing. What happens here would probably be a function of the availability of adequate supplies and facilities for survival of the whole community. If things like water, food, and shelters are in short supply, ugly competition for these necessities could break out. The morale of survivors may be weak, especially if a large part of the country has been affected.

It is certainly likely that a nuclear emergency would result in new and difficult problems. However, the effects on human behaviour are still those of a drastic negative shift in the demand capability ratio. The destructive input is greatly increased, and people would be subject to two novel input stresses, that of radiation effects, and fear of destruction and radiation hazards. The strain for both individuals and the social system would be very much greater than in disasters to date. However, as with other disasters, the best means of minimizing suffering and losses will still be those of adequate preparation and training, in terms of both the individual and the social system.

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Chapter 3

THE INDIVIDUAL IN DISASTER

Summary

Although a disaster creates apparent chaos, it is the survivors who take hold and do much of the early emergency work of rescue, first aid, and search. Four factors determine what and how much a person will do: (1) his injuries, (2) his estimate of continuing danger (3) his experience and knowledge relevant to disaster, and (4) his position and role in different groups. The kinds of roles which are important for handling an emergency are family roles like that of father or mother, professional and organizational roles like that of doctor or policeman, friendship and good neighbour roles, and general helper role. Disaster fatigue refers to the six kinds of emotional reactions observed in extreme emergency situations: (1) normal reactions, (2) individual panic reactions, (3) depressed reactions, (4) overactive reactions, (5) grief reactions, and (6) physical reactions. There are four principles for the management of emotional reactions in disaster: (1) decentralization of treatment and management, (2) application of brief and simple methods of treatment, (3) a positive treatment atmosphere, and (4) registration and sorting. Eleven recommendations for treatment are: (1) physical rest and care, (2) ventilation of feelings, (3) involvement in tasks, (4) involvement with others, (5) role assignment, (6) uniting family groups, (7) isolation and restraint, (8) control of the overactive, (9) management of grief reactions, (10) handling older victims, (11) managing children. Nuclear disasters would probably exaggerate most emotional reactions and these may be confused with symptoms of radiation sickness. Factors which enable one to predict and prepare for emotional reactions are: (1) degree of personal involvement, (2) unexpectedness of the event, (3) suddenness of the event, (4) intensity of the event, (5) duration of the dangers, (6) perceived ability to cope, (7) information and rumour, (8) pattern of past dangers, (9) discrimination between dangers, (10) influence of others, (11) physical condition, and (12) the individual's emotional history.

Emergency Behaviour

The impact of a sudden disaster typically produces dramatic change in the whole scene. Man's familiar surroundings are reduced to an unbelievable shambles, inciting shock, terror, and apathy on the one hand and depriving him of the normal cues for adaptive behaviour on the other. Unexpected confrontation with injuries and death add to the shock effects and create a host of urgent problems to be dealt with. The social system collapses, from the damage and disruption of communications and as most individuals forget their organizational roles like that of fireman or Red Cross worker. The net results is often a picture of frantic chaos as individual survivors react to various aspects of the situation with a sense of extreme urgency and with little coordination. Wallace (1956) has described the scene immediately following the impact of a tornado as follows:

> ... sudden frantic efforts to rescue self and trapped relatives, screams and cries for help, hysterical laughing and crying, particularly (as reported) by teen-aged girls, people rushing up and down stairs, into and out of cars, houses, etc., checking on the welfare of others; shouting warnings to 'look out for the wire,' 'don't light any matches,' etc. Some able to walk, spontaneously ran or were dispatched to neighbouring fringe and filter areas to summon aid. These persons turned in fire alarms at boxes, called security agencies (police, fire, and hospitals) by phone, and brought in trucks, people with bandages and antiseptics, and other first aid resources. Other persons were busy in self or local rescue, usually of a relative living in the same or adjacent house. Even severely injured persons made efforts to extricate themselves, to summon help, to estimate the seriousness and character of their own injuries, and to give instructions to rescuers on what to do and not to do.[1] (pp. 58-59.)

This picture of the first moments after the impact of a disaster would make one wonder how the survivors would ever make out with the problems of rescue and aid, and how they could re-establish some coordination. How do people bring order out of such chaos?

Some authors have described the first minutes after impact as a period during which survivors take an inventory of their situation. However, it is clear that very few persons do this in any purposeful manner or with any awareness of deliberately assessing the situation. They do not survey the situation, make a decision, and act; rather they react and respond to the immediate and the obvious. Apart from the small proportion who remain in a state of shock or apathy and respond very little, there are two kinds of things in terms of which survivors react at this point: some, like parents, typically respond in terms of their roles, as father or mother, and actively seek out and care for family members; others responds to the physical situation and to other people who are in their immediate surroundings, often in the role of a "helper". As the survivor responds to one aspect of the situation and another, he gradually builds up a picture of it which enables him to act in a more discriminating and purposeful manner. Then he may start to check on the welfare of neighbours, to examine his property, and to offer his assistance to various emergency and welfare groups and organizations that are beginning to form. Nevertheless, the typical survivor does not take anything like a formal inventory of the situation and try to get an overall

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[1] From THE WORCHESTER TORNADO: An Exploratory Study of Individual and Community Behaviour in an Extreme Situation, Publication # 392, Disaster Study # 3, National Academy of Science—National Research Counsil, 1956, $2.50.

picture of it. More often it is local emergency personnel and agencies which have not been injured or otherwise immobilized who initiate some assessment of the situation and attempt to communicate this to a headquarters or to associated agencies in nearby communities. When emergency agencies move in from outside, the process of assessing the damage and needs is speeded up. In the end, inventory is completed by the relief, welfare, government aid, and insurance agency personnel who appraise the losses, provide for rebuilding, relocation, and compensation.

The survivors in a disaster generally do rather well in handling the immediate problems of extrication, rescue, and first aid. In fact, several studies have shown that the people who lived in the impact area did most of the rescue work themselves before organized aid from outside was on the scene. Four factors determine the kind and degree of adaptive emergency behaviour which an individual will exhibit: his injuries, his estimate of the danger, his experience, and his roles in different groups.

1. **The nature and extent of an individual's injuries.** The seriously injured are usually not able to do more than offer information about their condition, and they may suffer from physical as well as psychological shock. A few of those with minor injuries may be preoccupied with them, but others will ignore them. In general it will be the uninjured who are most active with emergency tasks.

2. **The individual's estimate of the continuing danger.** If a person thinks there is further danger from fire, explosions, or radioactive contamination, his emergency behaviour is more likely to be limited to helping himself and his family and getting them out of the area.

3. **The individual's experience, knowledge and skills relevant to disaster.** What a person can do in a particular situation is determined by how he sees the problem and whether he had the skills and knowledge appropriate for the problem. These are learned. If they have not been learned, the relevant behaviour will not be impossible unless a person has some knowledge or skill from which to start. Indeed, without previous experience he may be unaware that a particular behaviour is called for in a given situation. He has not learned to "see" and discrimite the stimuli that call forth or evoke that behaviour. For example, when a person observes a child having an epileptic fit for the first time, having never heard or learned anything about epileptic fits, he may be surprised and appalled at the sight, but he will not recognize the significance of the child's behaviour and will not know what to do. To take another illustration, the individual who has never seen, heard of or learned about fire engines will not recognize the possibilities in a fire engine nor know how to use them. On the other hand, persons who have experienced tornadoes will recognize the signs and act appropriately and with dispatch—as did the man whose story was cited in Chapter 1. Unfortunately—from one point of view—most people have not experienced a disaster and hence have not acquired some of the behaviours that would be useful. However, this is really not necessary. Most of us have some idea or experience of the basic emergency tasks, like turning in an alarm, putting out a fire, stopping the flow of blood, digging up rubble, and calming a person who is upset; some have the skills for dealing with hot electric wires and broken gas mains, and a few know how to set up and operated communication facilities; and emergency services personnel—police, firemen, Armed Forces, St. John Ambulance—usually have extensive training and experience in a variety

of emergency skills. How the particular individual copes with emergency problems is largely a function of learning or of being instructed and shown how on the spot.

4. **The individual's position and role in different groups.** If a man is with his family group, he will usually act like a father and husband, if he is a fireman and at the fire station he will generally do what is expected of firemen, and if he is physician he will typically take the role of a doctor. However, people are usually members of several groups, like the family, a work or organization, a club, a professional group such as physicians, a neighbourhood group, the whole community, and society in general. If several of an individual's social groups are involved in a disaster, what roles will he adopt, and in what order? Two things determine the answer to this question: (1) the extent of a person's identification with different social groups, and (2) where his social groups are at the time. And these conditions cut across one another. If an individual is separated from his main social groups when disaster strikes, his first thought will nearly always be for his family. If at all possible, the man will adopt the role of father and seek out his children and wife, and the women will assume the role of mother and seek out and care for the children. In such circumstances, family roles take priority. Even members of emergency agencies and of professional groups like physicians usually look out for the welfare of their families first; helpers who move in from the fringe area check on their families first. When the safety and welfare of family members has been assured, the women typically stays with them to provide care and protection, while the father may take up one of his other roles, like that of friend, good neighbour, his professional role of policeman or physician. The typical progression is from family to close relatives, to friends, neighbours, and only somewhat later to organizations and the community as a whole. Those who have had close ties with relatives and neighbours, were active members of local organizations, and expressed loyalty to and pride in the community are more likely to go beyond their family roles to assist others and participate in emergency tasks with other groups and organizations up to the community level. Individuals with little identification beyond their families tend to show high self-and family-oriented activities during an emergency and are not so inclined to move out to help other groups. Survivors in rural areas have been found to exhibit this pattern also, presumably because they have not lived in a closely interdependent relationship with others. On the other hand, individuals who have a strong identification, through experience and training, with community oriented and emergency roles often move directly from their family role to their community role. Wallace (1956) found that 80 per cent of the uninjured who, after checking their families, turned to community tasks within about 15 minutes following the tornado in Worcester, were such men—including clergymen, firemen, a physician, and an individual who had been trained as an auxiliary policeman.

If an individual is with one of his main social groups in a disaster, he is likely to assume the role appropriate to that group, at least for a time. For example, the man who is with his family will take the family role, the physician in a hospital will probably carry on his doctor role, and emergency service personnel on duty are likely to maintain their roles as members of the organization. The factors which make an individual responsive to the group in such circumstances are his emotional involvement in the group, his training and experience in the group, and the degree to which he is integrated in the organizational structure of the group. Individuals who are caught up in some organizational role and are separated from their families may experience

intense anxiety and have difficulty in concentrating on the task in hand. This is the problem of role conflict, in which the individual is torn between loyalty to different reference groups. How such conflicts are resolved may be extremely important to the community. A state patrolman described the conflict between his roles as police officer, friend, and neighbour to the people of the community where he was stationed, as follows:

> As I drove around town after the tornado had passed I realized that the best thing I could do was to try to make contact with the outside and get help from there. I started out to drive to the next town and tried to call from there. As I drove out of town people I knew well would call me by name and ask me to help them find their relatives. Driving by and not stopping to help people who were looking to me as a friend was one of the hardest things I ever had to do[2]

The patrolman's decision led to his becoming the central figure in the development of organized and effective rescue work in that disaster.

There is one role that seems to cut across the group roles mentioned so far, namely, the role of helper. Members of our society have a strong tendency to respond to the less fortunate, and survivors in a disaster will often turn aside to help another who is trapped or injured. Even when the situation is particular frightening as it was after the nuclear explosion over Hiroshima, people fleeing from the city would stop at a cry for help and assist another victim. Indeed, emergency agency personnel like fireman and policeman, whether from the impact zone or nearby areas, have often been unable to maintain their organizational role but have pitched in to help with the immediate needs of the victims and carry out rescue and first aid tasks. In the case of such personnel, activation of the "helper" role slows down the development of organized efforts designed to appraise the overall situation, establish priorities, set up communications, and initiate a more orderly process of rescue, search, and aid. Survivors who generally do not go beyond caring for themselves and their families tend to sit and wait for assistance, to stand or wonder aimlessly, or to do inconsequential things like searching through old clothes. However, even these may respond to a need for help if they are given the proper leadership and direction. A fireman who worked in the devastated area following the Worcester tornado described both the random and dazed movement of such people, and their response to a clear need for help:

> There were quite a few people around, but they weren't in any particular spot: few here, a few over there. And everyone had, although not exactly a stunned attitude, a *shocked* attitude....when the officer told us that we were to lay our lines down to the pumper on lower Francis Street, I don't know where all the help came fom...that thousand feet of hose went down that street just about as fast as you could let it run;...the people around there were *very* cooperative in that case, very cooperative.[3] (p. 117).

[2] From the significance of multiple-group membership in disaster, by L.M. Killian. *American Journal of Sociology.* Vol. 57, 1952, p. 312. Chicago: University of Chicago. Used by permission.
[3] From THE WORCESTER TORNADO: An Exploratory Study of Individual and Community Behaviour in an Extreme Situation, Publication # 392, Disaster Study # 3, National Academy of Sciences—National Research Council, 1956, $2.50.

If operation of role behaviours is the main basis for an orderly social system under normal conditions, knowledge of people's most habitual roles is also the best means of predicting what they will do under the stress of disaster. And it is primarily because role behaviours are actived—family roles, helper roles, organizational roles—that chaos gives way to order following a disaster.

Role behaviour may also be used to reduce emotional upset and to get an individual to behave more constructively and in a way that will contribute to coordinated emergency efforts. The tactic is to remind him of his role, or to assign him a particular role, and if necessary, start him off in it. This may simply involve asking or instructing him to do the job—"Your job will be that of a policeman, take over that block and see that no looting occurs"; You take these children and be their mother till we get things sorted out"; You are the oldest boy in the family, you look after your two young sisters like a big brother". A related way of helping an individual to bear a stress, to gain self-control, and to get organized is to remind him of and affirm the positive features of his self-concept. As an illustration, in the Springhill mine disaster a man came to a psychiatrist and sought help. He was disturbed and obviously flustered. The psychiatrist got his name and, detecting a slight Irish accent, told the man that the situation was no worse than his brave Irish fathers had endured and managed and that he should steady down and show the same tough courage in the present situation. The man straightened up and went off to do a particular job which he was assigned.

A number of considerations should be born in mind if the role assignment method is to be used. The role behaviour should be familiar and available to the individual so that he knows what to do; nothing will be accomplished by asking a 15 year-old-girl to take the role of a pastor or priest. The role behaviour must be compatible with the individual's personality: a shy timid man may not take the role of a policeman too well. Assignment of a role should include specification of certain concrete tasks as a means of getting the person under way. And it should be indicated with reference to what others the role applies—"to this group of children", in that group of injured". When possible, the group should also be informed that the individual in question will take on a particular role. It may be necessary in some cases to start the individual off in a role by doing the first role task with him. Finally, the process of role assignment will be facilitated if the individual doing the assigning is perceived to have respect and authority. The power of role assignment is demonstrated by the fact that persons with criminal records have behaved in an exemplary manner in emergency situations when they were given a responsible role.

Emotional Reactions in Disaster

The impact and consequences of a disaster produce a variety of emotional disturbances in most people. Shock, fear, apathy, disorganized behaviour, and physical symptoms like nausea are some of the more common reactions. Three main points should be kept in mind when considering emotional reactions in emergencies: most of them are "normal" under conditions of acute stress, they are usually temporary and pass off within hours, days or at most weeks, and they generally do not lead to chronic mental illness in the form of neurosis or psychosis. These are the essential findings in scores of studies of natural disasters, bombings, and atomic explosions. Nerverthless, "normal" psychological disturbances constitute a major problem in emergencies because they

hinder rescue, salvage, and recovery operations; they may overload the already congested first-aid and medical facilities and communication and evacuation channels, and they may become more serious and persistent if recovery processes are not set in motion.

The American Psychiatric Association Committee on Civil Defense (Drayer, 1955) uses the term **disaster fatigue** to cover the emotional reactions and psychological disorders produced by an extreme emergency. Six kinds of reactions have been observed: (i) "normal" reactions, (ii) **individual panic reactions**, (iii) depressed reactions, (iv) overactive reactions, (v) grief reactions, (vi) and physical reactions.

(1)   One or more of a variety of relatively **normal reactions** are common in people who are subjected to acute stress like that involved in disasters. These include feelings of fear, excitement, discomfort, uncertainty, difficulty in thinking clearly, feelings of fatigue, tightness of the stomach or other muscles, occasional shaking or trembling especially of the hands, rapid heart beat, breathlessness, nausea and occasional vomiting, and possibly diarrhoea and urinary frequency. The term "normal" is applied to these reactions because they are common under such circumstances, they are typically temporary and no cause for real concern, and they do not call for special treatment other than occasional reassurance. Knowing that they can be expected will prevent undue concern when they occur. These normal reactions to acute emergency do not, properly speaking, come under the term disaster fatigue but are to be distinguished from the more severe reactions appropriate to the latter term. It should also be noted that the reactions which comprise disaster fatigue are not necessarily abnormal. Indeed, most of them are relatively "normal" under the circumstances. The distinction is that disaster fatigue reactions are disorders of a more serious nature and should be treated.

(2)   Although **individual panic** is much less frequent than might be expected, it is important that it be identified because it may become contagious and lead to crowd panic. Individual panic is characterized by complete loss of judgement, loss of all concern for others, blindness to the reality of the situation, and uncontrolled motor behaviour. It may be exhibited by blind flight or by wild and aimless running about.

(3)   **Depressed reactions** are those in which there is a marked reduction in behaviour of the individual. In extreme forms, the person may be immobilized and appear shocked, stunned, dazed and confused. The person in this state is typically very unresponsive to what is going on, he may not respond when spoken to or may simply shrug his shoulders and answer with an inconsequencial word or two. Such individuals are unable to help themselves or others and cannot take any responsibility that requires initiative. They are apathetic, and may putter about in an aimless or routine fashion that is not appropriate to the situation. Fortunately, most victims suffering depressed reactions recover fairly quickly or respond to appropriate treatment.

(4)   Some individuals will display exaggerated **overactivity** in a disaster. They may exhibit a sudden outburst of activity; or they seemingly try to respond to all situations at once, dashing in and out of rooms, talking rapidly and making endless suggestions and demands, jumping from job to job, and often getting in the way.

(5) Individuals who lose a family member or loved one in disaster may suffer an acute **grief reaction**. Typical symptoms and complaints include: a marked sighing respiration; loss of strength and near exhaustion; recurrent waves of physical distress lasting from 20 minutes to an hour with chocking, tighness of throat, shortness of breath, empty feeling in abdomen, and intense mental anguish; feelings of guilt; restlessness and much moving about as if searching for something to do, but lack of ability to initiate and maintain organized activity; lack of warmth for others, and a tendency to respond with anger and irritability; and occassionally a tendency to take on the traits of the deceased (Lindemann, 1944). It is important to distinguish grief reactions from other disaster fatigue symptoms because they may require special treatment.

(6) The sixth kind of reaction includes **physical disorders** that are more serious and persistent than those included under the previous category of normal reactions. Specific complaints are persistent vomiting and diarrhoea, loss of appetite, fatigue and exhaustion, and symptoms like loss of memory or of voice, paralysis of a leg or arm, and psychological deafness or blindness. It should be emphasized that the latter disabilities are not "faked" but are just as disabling as if the individual had a physical injury.

Principles for Managing Disaster Fatigue

There are four main principles in the management of emotional reactions in disasters (Drayer, 1954-1955): (i) decentralization of treatment and management efforts, (ii) the application of brief and simple methods of treatment, (iii) maintaining an attitude and treatment environment that emphasizes positive expectations of recovery, and (iv) appropriate registration and sorting of psychological casualties.

(1) The principle of **decentralization** stresses the importance of bringing treatment to disaster fatigue casualties rather than evacuating them or taking them to a hospital. The aim is to give treatment as soon as possible and as near the disaster are as practicable. Wartime experience with psychological casualties had demonstrated the advantages of such a policy. Treatment on the spot prevents such cases from swelling already overloaded evacuation channels and medical facilities; it limits the movement of such cases and thereby prevents them from having a contagious effect upon others; it facilitates recovery by keeping the individual in contact with familiar and significant others and by providing the victim with the opportunity to participate in purposive and constructive participations in the group; and it is the only realistic and practical method of treatment in an emergency situation. To evacuate such psychological casualties and place them under medical care in hospital is to emphasize their helplessness and encourage them to adopt the role of a patient. This will often hinder recovery. Immediate treatment of psychological casualties has the advantage that it catches the condition while it is fluid and reversible and before it has hardened into a more chronic pattern of behaviour. Early cases are more easily influenced by the simple methods of suggestion, reassurance, and directed involvement with familiar others and concrete tasks. Treatment in or near the disaster area also has the effect of emphasizing the temporary nature of such disturbances, and will thus counteract unrealistic concerns and fears about their condi-

tion. Finally, if survivors can be revitalized on the spot they can be an important source of rescue workers. They may be particularly useful in the situation because they are familiar with the place and people.

(2)   The second principle in the management of disaster reactions emphasizes **the use of brief and simple methods**. Not only do complicated programs of treatment require more time, professional personnel, and special facilities than would be available under disaster conditions, but military experience has shown that such methods often increase the patient's dependency and need for support, care, and treatment, and as a result often produce mediocre results. On the other hand, when brief and simple methods are used with the objective of restoring the previous level of functioning, the outcome is generally better and more quickly attained.

(3)   The third principle is that of providing a **positive treatment atmosphere**. First aid personnel should have an attitude of confidence and positive expectations of recovery. If emotional reactions and feelings of helplessness are treated otherwise, that is, with undue attention and the attitude that the victim has something serious and may require prolonged treatment and help, this will merely encourage him to adopt a helpless patient role. People suffering from disaster fatigue are essentially in a fluid condition and will tend to choose the behaviour that is expected of them. If the treatment personnel and environment emphasize anxiety, doubt, disability and illness by word or action, the victim's symptoms will be maintained rather than alleviated. By contrast, if the victim's feelings, reactions and behaviour are accepted calmly and as the expression of a temporary incapacity from which quick recovery is expected, this will facilitate recovery and rehabilitation. It should be emphasized that this "message" of positive expectation is generally conveyed more by attitude and action than by words as such. Hence personnel responsible for treatment must understand the nature of psychological reactions to disaster and themselves accept the temporary nature of such reactions.

(4)   It is essential to **register and sort psychological casualties** as they are treated. All such casualties should be identified in terms of name, address or organization, type and severity of symptoms, location at the time of the disaster event, and disposal. The latter point of information should tell where the victim has gone or was sent in order to facilitate relocating him should the need arise. Sorting is a matter of assigning the victims to different locations, groups, or tasks, including the referral of more serious cases to first-aid posts and other medical facilities. Registration data should be forwarded to a headquarters as soon as possible. Three purposes will be served by having adequate procedures for registration and sorting of psychological casualties. First, the random and uncontrolled movement and searching of people may be reduced significantly and medical facilities will be less congested by such people and by casualties that really do not require medical treatment. Second, the assistance of recovered psychological casualties and those who seek them may be enlisted in emergencies tasks if they know what has happened to their loved ones and where they are. This is especially important in the case of family members. Third, locations of each victim at the time of impact plus information as to his present whereabouts may be vitally important for follow-up investigations and treatment. Such information would be crucial in the case of a nuclear disaster.

Recommended Treatment Methods

The following treatment methods have proven effective with most cases suffering disaster fatigue symptoms.

(1) **Physical rest and care** may be indicated for many psychological casualties. Even a brief rest with attention to concrete physical needs of hunger, pain, and other physical complaints is reassuring and facilitates recovery. The atmosphere should be one of positive expectation of rapid recovery. Warm milk, cocoa, and such drinks may aid relaxation. Because they may add to the victim's confusion and make him less responsive, sedatives should only be used as a last resort, and on the advice of medical personnel.

(2) Victims should be encouraged to **ventilate their feelings**. This involves a brief interview, as short as 5 or 10 minutes, with the idea of stimulating immediate recall of the experience and associated feelings, listening with genuine attention, sympathy, and acceptance. Ventilation of feelings in this manner releases the pressure and is a concrete step in the direction of re-establishing responsiveness and communication between the patient and his environment. It is not desirable to indulge in cheerful chatter and to offer the time—worn but useless advice to "cheer up", "relax", and so forth. Such an approach may serve to frustrate the victim and shake his confidence in the counsellor.

(3) Victims should be **involved in tasks** as soon as possible, either with a helper or under supervision. Purposeful activity on simple and concrete tasks helps to redirect attention and facilitates the development of self-control and better organized behaviour.

(4) The psychological casualty should be **involved with others** in some reciprocal fashion. The idea is to make him an active part of a group or social system-which will stimulate support, control, and direct his behaviour. It is important that the positive expectation of quick recovery be cultivated in such groups, otherwise the members may stimulate and encourage helpless behaviour in one another.

(5) If an individual is communicating and responsive to the spoken word, **reminding him of his identity** may help him to get his bearings and to start to respond in a constructive manner. Assigning concrete tasks in line with his role will help to get him going. For instance, the physician may be reminded that he is a medical doctor and requested to look after an injury; a teacher may be reminded of her teacher role and put in charge of children, and so on. This tactic should only be used when the victim is "ready" to assume some responsibility, however little, and then he should be supervised or have someone work with him for a time.

(6) Individuals with emotional disturbances should be **placed with those emotionally close to them**, that is, with family, friends or neighbours, when they are on the road to recovery. By reducing separation anxiety and providing victims with familiar faces, roles associated with those groups may be reactivated.

(7) For those who exhibit panic reactions, early isolation and restraint should be used to prevent them from disturbing and infecting others. If gentle firmness does not work, restraint may be necessary. Generally such a person will steady down in 5 to 10 minutes, when his attention may be directed to concrete tasks and helping others, under appropriate supervision.

(8) The energy of those with overactive reactions should be directed into specific and purposeful tasks. Because such persons tend to talk a lot and be outspoken, whether with expressions of resentment, recounting of rumours, or making suggestions, it is important to dissuade them from voicing such upsetting thoughts. One tactic is to tell them that responsibility for the disaster can be discussed later but that the immediate and urgent need is to help others and repair the damage. It may be desirable to separate them from other victims who would be upset by their behaviour.

(9) The methods outlined thus far are also appropriate for managing grief reactions. However, such cases may require prolonged treatment, over weeks. It is important to share the bereaved's feelings, help him to detach himself from the deceased and to develop an interest in others and in purposive activity. The few cases which become both agitated and depressed may require medication to reduce the risk of suicide.

(10) Older victims will usually respond to the above methods, but may not respond to treatment as quickly as younger persons. Because they may be more confused and unable to participate in emergency tasks, it may be important to provide them with more reassurance and supervision.

(11) The management of children does not require any new methods. Their reactions tend to reflect those of adults around them and may best be treated by keeping them with steady adults whom they know, preferrably their parents. Children may also be given small tasks and responsibilities as a means of diverting their attention and of getting things done. However they should be provided with constant supervision.

Psychological Reactions and Nuclear Hazards

A nuclear explosion could be expected to create special problems as far as individual behaviour is concerned. First, a larger proportion of the survivors in the impact area is likely to experience shock and emotional upset. Second, more of their familiar environment will be destroyed, leaving them without the cues, resources, and personnel for coping with the emergency. Third, the survivors will probably be aware of the dangers from radiation and this will greatly add to their anxiety and fears. Fourth, impact injuries and penetration wounds, burns, and especially radiation sickness will present special problems for diagnosis and treatment. And fifth, the continuing danger from radioactive fallout will pose a special threat.

As noted in the previous chapter, the special conditions which a nuclear explosion presents do not call for any new principles to explain how people will react. The problems are still essentially those of a

drastic shift in the demand-capability ratio both for individuals and the social system, of widespread shock, fear, and other emotional reactions following impact, and the task is that of promoting emotional recovery and the development of appropriate and coordinated coping behaviour. The destructive force and extent of a nuclear explosion will exaggerate these problems, but we are still dealing with injured people, people with fears and other emotional reactions, and with the problem of getting them to behave adaptively.

However, the two new factors of radiation sickness and knowledge of danger from radioactive fall-out will be sources of additional physical and psychological symptoms, and of threat, respectively. The introduction of these factors will have an effect on the functioning of role behaviour in individuals, and on the emotional and psychosomatic reactions and symptoms which people display. Although there is no systematic evidence on such effects, we can infer some things from the limited studies of Hiroshima and Nagasaki on the one hand and from our knowledge of the effects of fear and of radiation on the other.

Survivors of a nuclear explosion are likely to exhibit exaggerated reactions of shock, fear, apprehension, despair, apathy, and depression, these may persist for much longer due to the extent of the destruction and losses, the bleaknes of the future, and continuing fear of radioactive effects. Under these conditions it may be much more difficult to evoke adaptive behaviour, at least of an organized and community-oriented kind. Family role behaviour is likely to be activated and maintained, but organization, emergency agency, and community roles may be more difficult to arouse. The possibility of panic behaviour is likely to be increased because of the terror of the impact and the continuing threat from radioactive fallout. On the other hand, this is not likely to lead to the destructive consequences characteristic of crowd panics, unless the community is located on an island or penninsula with limited exits. Moreover, assuming that family and helping roles will be activated as they were in Hiroshima, these will put a brake on mass flight.

It is unfortunate that many of the symptoms from radiation sickness are like those from disaster fatigue—and the time sequence is not very different. The earliest symptoms of fairly high doses are nausea and vomiting, diarrhoea, vague bodily discomfort, fatigue, and loss of appetite. These may occur within one to three hours of exposure. With doses of over 1000 rems, the victims may exhibit, within 30 minutes of exposure, diarrhoea, fever, lethargy, tremor and excitability, ataxia or lack of coordination in the use of arms and legs, convulsions, and intermittent stupor, and the victim may experience little or no pain. Differentiating some of these signs from acute disaster fatigue symptoms will pose a major problem for diagnosis and treatment. Moreover, fear and expectation of radiation effects will confound the picture further because people often develop some of the symptoms they fear, and they are not easily reassured. The problem here is difficult and delicate; it is that of reassuring victims so that they will be able to behave more adaptively in the emergency situation and not move immediately to overload medical facilities, and at the same time not reassure them to the point where they may overlook symptoms and so risk serious after-effects that early treatment would prevent or reduce.

The previous recommendations for the treatments and management of psychological casualties still stand, with special emphasis on the principle of adequate registration and sorting of all survivors in the danger area. Rest, emotional ventilation, reassurance, purposive concrete tasks, and re-establishment of primary groups will help to control and direct individual behaviour. Special methods of providing reassurance will probably be required. The information must be credible and realistic, frankly admitting the negative but stressing the positive. The individual should be given something concrete, like an appointment card, to guarantee that he will be given an adequate examination within a specified time. Emergency measures personnel should be clearly

identified by their uniform or badges so that they are recognized as experts and authorities. Re-assurance should be simple and concrete, designed to enable the victim to discriminate between psychological shock reactions and radiation sickness—for instance, he can be told that if there was a concrete wall between him and the explosion, he and others with him are unlikely to have got much radiation and therefore any nausea which they experience within the first three or so hours is probably due to psychological shock; or, that those in particular areas may experience itching and burning of the skin, but this indicates beta burns from early fallout and is not itself dangerous to life, although they should seek treatment within so many hours or days.

Managing the problems of the diagnosis and treatment of radiation sickness, especially since all of those who experience disaster fatigue symptoms will have to be checked also, will be a formidable task and it is unlikely that the community's resources of specially trained personnel, facilities, and instruments will be sufficient to do the job in most instances. The solution to the problem is for outside emergency agencies to move in with their resources. Nevertheless, a bombed community would probably have to handle the post-impact on its own for short time at least. Again, adequate preparation, instruction, and training before the fact will prove the best means of handling such problems.

Predicting and Preventing Emotional Reactions

In this section we will review the factors and conditions which make for adaptation or getting used to danger and stress, or produce sensitization or increased fearfulness, which determine the kind and intensity of emotional reactions, and which contribute to an emotional upset which persists and impairs adjustment after the danger has passed. A knowledge of these critical factors can be used to predict, prepare for, and sometimes to prevent the more serious psychological problems in an emergency.

Degree of Personnel Involvement. Probably the most important factor in determining a person's reactions in a fear-producing situation is the degree of personal involvement. MacCurdy (1943) suggested the distinction between *near-miss* and *remote-miss* experiences in terms of their different degrees of personnal degrees of personal involvement. A near-miss involves direct personal involvement with physical injury, damage or destruction of the room or shelter where one is, or injuries and fatalities of loved ones and others near by. A remote-miss is that experience in which the individual experienced many of the sights and sounds of danger but came through with no personal experience of the damaging consequences. A near-miss has the greatest emotional impact, often producing shock, dazed stupor and outright terror at the time-in other words, the kind of reactions that are common among people in the impact zone following a disaster. The emotional after-effects of a near-miss are also more intense and persistant than those after a remote-miss. Such reactions include nervousness, jumpiness, fatigue, loss of appetite, difficulty in sleeping, nightmares, anxiety and tension. In addition, a near-miss sensitizes the individual to the danger signs that were associated with the experience, making him unusually apprehensive, jumpy, and otherwise fearful of such signs in the future. A remote-miss, on the other hand, does not produce as much emotional disturbance at the time, individuals usually get over the immediate effects within minutes, and they generally become adapted to the danger signs to some extent so that they pay less attention to similar signs in the future.

Remote-misses have important secondary effects, namely, those of increasing the individual's feelings of self-confidence, invulnerability, and morale. An interesting feature of feelings of invulnerability is that they are often accompanied by various thoughts and utterances such as "there hasn't been a bomb made for me yet", "Oldenburg is safe because Mr. Churchill has an Aunt living here", and various forms

of prayerful phrases. Apparently such thoughts or symbolic responses are reassuring because they were associated with relief from danger and with ultimate safety. However, if a near-miss should now occur, it often breaks down the feelings of invulnerability and the individual may feel that he is completely unprotected and quite helpless. It is as if the thought defences which he had build up are suddenly wiped out leaving him especially vulnerable without such supports.

As is so often the case, extreme forms of both sensitization and adaptation tend to result in a greater disturbance in the face of new stresses than does an adjustment somewhere in the middle. Janis (1958) found evidence supporting this proposition in a systematic study of patients about to undergo major surgery. A proportion of the patients exhibited very little or nor anticipatory fear or anxiety prior to the operation. They were calm, showed no sleeping disturbances at night, manifested no signs of worry or emotional tension, and made little effort to get information about the operation and its possible consequences. In many respects, they seemed to have feelings of invulnerability. However, when they were faced with the pain and other stresses involved in confinement and post-operative treatment, these individuals tended to react with considerable anxiety and depression, angry resentment, irritability and grouchiness directed against the doctors, nurses, orderlies and hospital staff, and expressed feelings of hopelessness and despair.

Another proportion of patients faced the operation as if they had been sensitized to the pain and possible consequences of a serious emergency. They expressed high anticipatory fear with much tension and anxiety and occasional outburst of tremblings, weeping, flushing, and so forth. They found it difficult to concentrate and complained of inability to sleep. They were jittery and nervous. After the operation, they typically continued to exhibit and experience a high level of fear and anxiety. In contrast to those who initially behaved as if they were invulnerable, these very fearful patients did not exhibit irritability and hostility toward hospital staff but tended to express feelings of gratitude and admiration and were continually seeking reassurance. In most cases such patients had a history of chronic and acute anxiety in response to a variety of danger situations, major and minor.

A finding of special importance was that it was most difficult to prepare the sensitized type of patient psychologically for the operation. However, only traditional forms of talking therapy and reassurance were used, and it is quite possible that a new form of therapy called systematic desensitization (Wolpe, 1958) might help many of these persons. Janis found that the adapted or invulnerable kind of person, on the hand, could be prepared for major operations by giving the patient realistic information and impressive warnings about what he would suffer and the related consequences, thus providing a mental rehearsal of the dangers, pains, deprivations, inconveniences and discomforts that were likely to happen. This apparently reduced the surprise and shock effects of post-operative problems and prepared the individual to interpret them in a realistic manner. This kind of preparation markedly reduced post-operative reactions in this group, the treatment acted like a kind of *emotional inoculation*. It should be emphasized, however, that such preparation of patients for acute stress experiences should be carefully planned and individually administered by well trained persons whom the patient looks to as an authority in the situation. It is quite possible that properly administered emotional inoculation would prepare people for other kinds of emergencies in a similar fashion.

Although experimental studies are lacking, there is widespread support for MacCurdy's theory of near—and remote-misses from studies on servicemen in combat and civilians in air raids in World War II. The phenomenon of adaptation to warning signs, when people did not experience direct personal involvement with drastic consequences, was very common. At the beginning of the war the majority of the British people, and especially those in London, expected to experience massive air attacks and they initially responded to air alerts by seeking shelter. However, as the months went by and very few bombs fell and because many of the alerts were false-alarms, many people began to ignore the air raids sirens. In addition, hundreds of thousands of those who had been evacuated from the cities returned to their homes. Even when the air blitz of 1940 started, although there was a noticeable increase in anxiety and fear at first, there was

a definite decline in fear among the general population as the blitz continued. In fact, of course, the great majority of the people did not experience near-miss bomb explosions, even when the raids were heavy and destructive.

Decrease in fear with successive air raids was also found among those who were not personally involved in drastic consequences in Germany and Japan. People seemed to develop a kind of detachment toward the risks that were presumably involved, somewhat in the manner that people have an air of detachment toward peacetime traffic dangers (Janis, 1952). Near-miss experiences, on the other hand, usually sensitized people to the experience of future bombings, and were largely responsible for the cases of emotional disturbance which turned up at first-aid posts and hospitals. It was also found that a high degree of personal involvement in a bombing attack was associated with decline of morale among the Germans.

Studies of soldiers in combat reveal similar processes of adaptation or sensitization. Men under fire for the first time were generally much more fearful, jittery and unreliable than after they had some experience with the dangers of combat. If their first experience was not too intense and did not produce too many directly involving near-misses, a battle unit was likely to emerge with increased self-confidence and morale and to exhibit greater steadiness on future occasions. If their first battle experience resulted in many casualties and near-misses, however, survivors were shaken up.

Unexpectedness of an Emergency. Whether a danger is expected or unexpected has a bearing on how much shock and emotional upset will be produced. The unexpected is much more disruptive. There is little that one can do after the fact, but much can be done in the way of mental rehearsal, training, and practice exercises in preparation for emergencies. Much of the shock and emotional impact will be prevented if there are no big surprises.

Suddeness of the Event. Sudden impact of a disaster event produces much more disruption of behaviour than does an impact which has a gradual onset. The problem here is that a person has no opportunity to adapt to the event nor to think of and take protective action. This points to the importance of an adequate warning period and training in response to warnings.

Intensity of the Event. The intensity or physical magnitude of both the warning signs and the consequences of impact in terms of destruction, injuries and deaths, has an obvious relationship to the reactions of the victims. Apparently the shear intensity and shrillness of the sirens in Great Britain during World War II initially evoked fear and contributed to the warning to take shelter. The sound of exploding bombs nearby had a similar fear-producing effect. As for the magnitude of the impact in terms of destruction, injuries and deaths, this will generally be correlated with the number of people who experience direct personal involvement. Moreover, the greater the magnitude of the impact, the more will a person's environment be shattered and drastically changed, thus depriving him of the familiar cues which ordinarily guide his behaviour in a steady manner. In general, some foreknowledge of the probable physical magnitude of an emergency will help to predict the extent and persistance of emotional reactions like shock, anxiety, and apathy, and thus to provide a basis for the planning of emergency measures. In addition, such foreknowledge may be used to prepare individuals so that the consequences are not so unexpected. This kind of knowledge is available with respect to nuclear emergencies and it is hardly necessary to state that it should be used in these ways.

Duration of the Stress. The duration of a danger period has a direct bearing on the frequency and seriousness of anxiety and fear reactions on the part of those othergoing the experience (Williams and Smith, 1949). It should be noted, however, that continued and repeated exposure to danger signs will typically lead to adaptation unless there is at least one acute experience like that which has been called a near-miss. Thus this factor interacts with the first one, degree of personal involvement. There is also evidence that if a person knows the probable duration of danger or threat, it will produce less disruption of behaviour and be tolerated much better. Presumably this is so because there is a fairly definite expectation of relief at a

particular time. Then a person can exhibit a kind of thought control over his own behaviour in the sense that he can say to himself, "Now there are just 6 more days,...and now just 5 more," and so contain emotional reactions for short periods at a time. Members of Alcoholics Anonymous use this method in controlling their drinking behaviour: they limit their efforts and expectations of self-control to one day at a time. A problem may arise with this technique if the time runs out and no relief appears. However, this can often be handled with realistic information and by developing a new definition of the situation and its probable time sequence, especially if this is done appropriately in a group situation.

Perceived Ability to Cope. Perceived ability to cope with a danger has an important influence on the emotional reactions that the situation produces. If a person can think of nothing to do that will reduce the danger and its consequences at least a little, he will feel highly vulnerable and be overwhelmed by a sense of helplessness. Moreover, his whole attention will be focused on the danger sings so that he gets maximum exposure to their disturbing effects. As a result, he may experience more fear than is really justified. Although incendiary bombs caused more casualties than high explosives in Japan in World War II, civilians feared the explosives more. One reason for this apparently was that the victims felt less than able to escape from high explosives and could do less to limit their damage. On the other hand, if a person has some courses of action and protective measures in mind, and especially if he then engages in such purposeful activities, he almost invariably loses much of his fear. Apparently this happens for either or both of two reasons: his action changes the situation somewhat and he interprets this as bettering the situation, and his attention gets turned away from the danger sings and hence he experiences a decrease in their effects. A simple illustration of the latter is when one is climbing a high ladder: while engaged in the purposeful activity of climbing, one's attention is on the task in hand, but if one pauses and looks down and around, fear surges up.

Apparently the American astronauts have a high level of confidence in their ability to cope with the very real dangers which they face when circling the earth, and this rests on their ability and training to think of and carry out some remedial action. They experience tension and fear, but this is controlled and reduced by deciding what to do and doing it. As one astronaut said,

"I know this flight is more dangerous, but the training has been more rigorous. If I get unnerved, I'll fall back and regroup, then focus my attention on what has to be done." Another commented, "In a tight situation you have to stop, take stock, decide what you are going to do, and go ahead and do it. I have often told cadets that sometimes you have got to do something — even if its wrong. The main thing is to get your mind busy thinking and not worrying. When you can't do anything That's the worst time....Whenever I think of what might go wrong, I think of a plan to take care of it. Other than that, there is nothing I can do about it, so I see no point in worrying about it. I know the worry is still there, but is doesn't bother me any more".

Development of confidence in the ability to cope with danger is largely a matter of instruction and training in the kinds of remedial and protective behaviours that will have positive effects on the situation. When the danger is sudden and great, or immediately after the impact of a disaster event, many individuals may suffer from at least momentary shock and not be in a position to utilize their information and experience. However, when the shock passes, their fear and other emotional reactions will be less severe if they feel they can do something about the situation, and go on to do it.

It should be emphasized that there are many kinds of coping behaviour which will have this effect; two of the most important in disasters are doing something about the welfare of others, and seeking to communicate with the outside world and with those who can offer assistance. The miners who were trapped underground in the Springhill disaster found that hammering an air pipe in order to let rescuers know that

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* From Psychological Responses of the Mercury Astronauts, by G.E. Ruff, and S.J. Korchin, In G.H. Grosser, H. Wechsler, and M. Greenblatts (Eds.), *The threat of impending disaster,* Cambridge, Mass.: M.I.T. Press, 1964, pp. 218-219. Used by permission.

they were alive took their minds off themselves and their potential fate. As another example, after an air raid on Cardiff in World War II, rescue workers started digging into the rubble of a former house when they thought they heard a muffled voice. After several hours of work they finally rescued a six year-old boy. He had been singing "God save the King" all the while, and did not seem too upset by the experience. His father, a former miner, had told him that if the men sang when buried in a mine they would eventually be rescued. Believing that this was so, and engaging in this purposeful activity, presumably protected this lad from the severity of the emotional effects that he might have experienced.

Information and Rumour. Verbal reports, whether factual, exaggerated, or simply rumours, about the destructive, injuries, deaths, and terrors which victims have suffered in disasters or bombing may increase apprehension and anticipatory fear in other people. This was observed in World War II when an untouched community was subjected to a large influx of refugees from a heavily bombed city. Apparently such reports have a sensitizing effect on people who have had little or no experience of similar situations, and who therefore cannot check the reports against their own experience. It would be important to prevent and counteract this kind of sensitization by preparing community members with whom evacuees will have contact, by giving them realistic information about the situation and telling them that the victims will probably give an exaggerated account of their experiences because of their personal involvement. Another possibility would be to isolate such victims until they have settled down.

Pattern of Past Dangers. If a series of emergencies occurs, such as repeated air raids, the pattern or schedule of these has an influence on people's reactions. It was observed in World War II that a succession of air raids led to greater emotional adaptation than did sporadic ones, apparently because there was spontaneous recovery of fear reaction if the raids occurred only now and again (Glover, 1942; Vernon, 1941). This was the case with remote-miss experiences. A succession of near-misses, on the other hand, was likely to be most disturbing (Schmideberg, 1942). Sudden changes in the danger signals or stimuli typically increase apprehension and fear. People who are adapted to the former stimuli are aroused anew. This may prove to be a mixed blessing. If people have adapted to a set of warning signals, to introduce new ones will probably be effective for a short time. However, if changes are repeatedly introduced, they will adapt to the changes themselves and be most difficult to alert with any form of warning. If a real emergency then occurs, anxiety is likely to increase but may be expressed as anger and resentment against the authorities. For example, when sneak raids began after the blitz on Great Britain in World War II people experienced a marked increase in fear. However, at the same time they were angry and resentful against the authorities for not preventing the sneak raids or providing adequate warning.

Discrimination between Dangers. Situations which makes it difficult for people to discriminate among danger signals, signs of reassurance, and cues which will enable them to take protective measures generally increase apprehension and fear. Air raids at night are in the category. People could not see what was going on, could not determine the nature and extent of the threat, and movement was hampered. When air raids began on Great Britain in World War II people could not distinguish between the sound of their own anti-aircraft guns and the exploding bombs with the result that the guns aroused as much fear as the bombs. When they learned to make this discrimination, their fears were reduced and indeed the sound of their own guns became reassuring.

Influence of Others. An individual's interpretation of any event and especially of danger signs is influenced by the reactions of others with whom he is in contact. If others are fearful, jumpy and upset, he will tend to "catch" their emotional reactions and behave in a similar manner. On the other hand, if his companions are cheerful, he will tend to share in the general optimism. A notable feature of this kind of contagious effect is that a leader, a recognized authority, or a friend has much more influence than "general" others, spreading fear if he is fearful or providing reassurance if he is composed. This phenomenon is most important in the case of children. Children typically do not exhibit any unique reactions to disaster, bombings, or other severe emergencies. Rather, their reactions tend to follow those of their parents or of other admired and respected adults with whom they happen to be at the time. This finding points to the primary methods for managing children in an emergency, namely that of providing them with a good example.

Individuals who are separated from their families or friends, who are alone at the time, or who generally do not have friends, are especially liable to experience severe anxiety in an emergency situation. Presumably this kind of situation increases feelings of helplessness. In addition, separation from loved ones may lead to acute concern about their safety. After recovering from the shock of a disaster, a first impulse of people who are separated from their families is usually to seek them out. In terms of reducing this kind of anxiety, preventing random searching for family members and friends, and cooperative action, it is very important to reestablish family units and at least provide them with authoritative information about one another.

Physical Condition. Any factor or condition which reduces physical stamina will make an individual more susceptible to emotional reactions under stress. Such factors include hunger, fatigue, lack of sleep, illness, and other deprivations and discomforts.

The Individual's Emotional History. The final factor which influences an individual's reactions under acute stress is his history of emotional disturbances. If an individual has been relatively stable in the past, especially under similar kinds of emergencies, he is likely to stand up better, suffer less extreme reactions, and to get over them sooner, even if he is then subjected to near-miss experience (Fraser, Leslie, and Phelps, 1943). On the other hand, those whose behaviour in the past has been characterized by anxiety, fear, and phobic reactions will tend to suffer exaggerated emotional reactions in a new emergency. The lesson here is that the best way to predict an individual's behaviour is to look at his behaviour in the past under similar circumstances. In effect this provides a basis for selecting individuals for key roles in emergency situations. It may also be possible to select out and prepare those who are susceptible to anxiety and fear, possibly by desensitization treatment (Wolpe, 1958).

In line with the above analysis of the determinants of emotional reactions in emergencies, it has been observed that people often behave in a way to control and reduce such reactions. Adaptation to the signs and consequences of danger is promoted by extensive curiosity behaviour, as manifested after natural disasters and after bombing raids. People learn to discriminate among cues as indicative of danger of different kinds and degrees, with the result that they behave more appropriately rather than exhibiting a generalized fear reaction. Victims of natural disasters or bombing raid tend to seek the company of others, thereby generally reducing feelings of isolation and helplessness and the attendant anxieties. In London during World War II those who went to collective underground shelters got more sleep, gained weight and were ostensibly less anxious than those who stayed in private shelters (Thouless, 1941). Coincident with seeking the company of others, people tend to communicate more freely during and after an emergency. They talk with casual acquaintances and neighbours and to strangers to whom they would normally have little to say. By recounting their experiences and sharing them with others, emotional tensions are reduced (Schmideberg, 1942; Vernon, 1941). In the case of air raids, it is notable that this increased communicativeness occurred only during and after the first few raids, apparently serving to facilitate the process of adaptation to the dangers. People tend to cultivate and practice attitudes, behaviours, and thoughts which ward off fear and anxiety, such as expressions of faith in God, or rituals and superstitions which are believed to protect them. Some adopted the habit of going to an air raid shelter under the least provocation, apparently believing that if they "did what they were told to do" they would be rewarded for their obedience. In Japan, western clothes were worn by many women because they believed that this would protect them against bombs. Possibly associating extreme danger with punishment, people in Germany, Great Britain, and Japan during World War II tended to emphasize moral and conforming behaviour as if to insure that they would have little or nothing about to which to be guilty and hence not deserve punishment. And it was observed in the bombed cities of Great Britain that many people were concerned to occupy themselves with "business as usual", thus engaging in some form of purposeful activity and turning their attention away from the dangers in the situation. Such behaviours serve to reduce anxiety and fear, and as long as they do not detract from adequate attention to real dangers and the appropriate protective actions, they will serve the individual well.

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CHAPTER 4

SOCIAL PROBLEMS IN DISASTER

Summary

Panic, defined as irrational flight, is relatively uncommon in natural disasters. It only occurs when survivors perceive increasing danger and diminishing avenues of escape, and these conditions are usually absent. There is generally not much looting, at least by the survivors themselves in the emergency period. Outsiders may be more prone to loot. Somewhat later there may be other kinds of exploitation like obtaining goods and compensation under false pretenses, and profiteering. A common problem following natural disasters is convergence, of messages, people, and supplies moving into the area, and survivors converging on treatment, relief, and information centres, all adding to disorganization and confusion. A disaster typically produces a series of mood and morale changes in the survivors. The disaster syndrome consists of four phases of emotional and mood reactions: shock, suggestibility, euphoria, and frustration. Recurrent disasters, if they do not cripple the community, may lead to high morale and community cohesiveness. A major problem in disaster is social disorganization and collapse with the result that individual survivors must largely fend for themselves for a time. Communication, coordination and control, and authority are the three main factors in maintaining and re-establishing social organization. The assistance of outside emergency organizations is often essential for establishing order and coordination of emergency measures. Realistic and decisive leadership is vital in handling the problems of disaster. A good leader appreciates the nature of a problem, initiates action, coordinates the activities of others, and reduces uncertainty and apprehension in others. If official leaders do not rise to the occassion, emergent leaders usually take over. What man becomes the leader in a situation depends on his having the qualities which serve the group in satisfying their needs and attaining their goals in that situation.

The Problem of Panic

Most terms used with reference to human behaviour have such a variety of meanings that it is difficult to know precisely what is being discussed. The word "panic" is a good example. "(It) is used by different writers, and sometimes the same writer, to mean a subjective feeling of fear or terror, bad judgement, inefficient behaviour, acting too fast, no acting fast enough, blind flight, any kind of flight, paralysis, or a vague global concept of wild, animal-like behaviour."[1]

In the literature on disaster the term "panic" is used to refer to uncontrolled fear-motivated flight behaviour which occurs without concern for others, for alternative courses of action, or for social consequences. The flight may take almost any form, including running, crawling, riding, jumping or driving a vehicle. Panic behaviour is always oriented, in purpose, away from some danger or threat. Even when an individual apparently runs into a danger, as he dashes through a burning doorway, his purpose is to get out of and away from the house. It is motivated solely by the fear of what might *happen* — "If stayed there I would have been killed", and there is no attempt to deal with or control the danger itself.

In many circumstances in which the flight of panic occurs, it is the most adaptive course of action in that particular situation. The most effective and appropriate action possible when the walls of a building are tottering from an earthquake is to flee. Likewise, to jump from a first storey window of a burning building may be the most functional kind of behaviour. It would have unhappy consequences, however, if the window were on the tenth floor while at the same time there were less dangerous exits available. The problem with panic behaviour is that the individual is not able to think ahead to the possible consequences. He is not rational, in so far he is unable to consider alternative courses of action; and does not have sufficient self-control to carry out an orderly withdrawal or escape from the situation.

Just as individual panic behaviour is not always harmful, so with panic behaviour in a group. If the panic behaviour of a number of people is appropriate in itself and has no anti-social consequences, such behaviour may serve a purpose. Thus the mass flight of many householders from their gas filled houses in Brighton, New York, had no anti-social and harmful results in itself. However, when panic occurs in a large number of individuals in a somewhat limited area, the possibilities of damaging consequences are greatly increased.

The necessary conditions for panic are: (1) when people perceive or believe there is an immediate, severe, and increasing danger. (2) when they perceive or believe that there are a limited number of escape routes; (3) when they perceive or believe that the escape routes are or may be closing. It should be noted that the term "believe" has been used in the above definition. This is important because it is not necessary that individuals actually "see" the danger or "see" the escape routes closing; it is sufficient that they hear, rightly or wrongly, about these possibilities. Each of these conditions is necessary for panic to occur. If there are no escape routes whatsoever, there will be no panic—where can one flee in a sunken submarine or in a blocked mine? On the other hand, if there are all manner of open escape routes, though there may be flight, it will

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[1] From AN INTRODUCTION TO METHODOLOGICAL PROBLEMS OF FIELD STUDIES IN DISASTERS, Publication # 465, Disaster Study # 8, National Academy of Sciences—National Research Council, 1956, $0.75. pp. 6-7.

not have the urgent and irrational character of panic. Following the atomic bombing of Hiroshima, most of the survivors streamed out of the city. They were frightened, but more by what *had* happened than by what they thought *might* happen. Moreover, there were innumerable escape routes and this reduced the urgency of the flight. Indeed, many individuals turned aside to answer a call for help from an injured or buried victim. On the basis of a survey of all available information, Janis (1951) concluded that there was relatively little real panic in the mass exodus from Hiroshima.

A number of other factors may contribute to increase the likelihood of panic. First, a relatively sudden and drastic change of stimulation—darkness, very bright light, intense sounds; second, confusing and ambiguous stimulation, from people running around, from vague and contradictory information; third, a crowd situation, because there are few formal and informal relationships to control the behaviour of individuals, and the behaviour of a few is likely to be imitated by others; and fourth, lack of experience and preparation such that people do not know what to expect, tend to over-estimate the danger, and have not practised thinking of alternative courses of action.

The role of the group or crowd condition was illustrated in the Iroquois Theater fire in Chicago, in 1903. In fact, the theater was not burned but was damaged so little that performances could have been put on within two days. However, the crowd in the theater perceived the danger, and then when a few panicked and headed for what seemed to be a limited number of exits, there was a stampede in which 602 died.

Panic behaviour has been uncommon in both natural disasters and emergencies associated with war. However, it should be emphasized that this is undoubtedly a function of the conditions which typically have obtained. The greater proportion of natural disasters have happened with very little warning and without clear and frightening signs that a disaster was about to strike a particular population—there was no time for panic behaviour to develop. After the impact, the major dangers were over so there was no point in flight. Finally, escape routes have generally not been limited nor perceived to be closing. Thus the conditions for panic have simply not existed in most disasters.

The situation might be very different if a definite and rapidly increasing threat of nuclear war was to occur. If people in some of our large cities perceived those cities as potential targets, if they believed that war was likely in a short time, and if they were stimulated by past experience of traffic jams, by news, rumours, or observation of people departing, to believe that the escape routes from the city might be blocked or clogged, there might well be a general tendency to panic. The pressure to take one's family and run for it could build up rapidly in such circumstances. The problem in such a situation is essentially twofold: adequate, accurate, authoritative, and credible information on the one hand, and adequate traffic control on the other.

Looting and Exploitation

Contrary to the popular view, there is generally not a great deal of looting, stealing, crime and profiteering following natural disasters. The popular view probably arises from the tendency

of the mass communication media to report the dramatic and the unusual, and also from a misunderstanding of the motivations and conditions under which such kinds of anti-social behaviour occur. As Fritz and Matthewson (1957) have emphasized, whereas disasters may increase the opportunities for exploitation, they also reduce the motivation for this kind of behaviour. This is the general finding *for those directly involved in the disaster, and for most of the emergency period following a disaster.* A disaster usually eliminates the differences between people, in wealth, property, and status, which are important in stimulating exploitation. At the same time, all of the victims are faced by common and very urgent problems of fear and survival. Moreover, those who in normal times might have felt rejected, isolated, or detached from society, will generally find themselves wanted, needed, and accepted in a disaster. Indeed, one of the remarkable social effects of a disaster is the manner in which it at least temporarily increases democratization and social solidarity among those affected, as they share a common condition and potential fate. What may occur is that as the survivors engage in rescue and relief work, valuables are picked up in the course of such tasks, not because the individual plans to loot or steal but because the article was valuable and out of place at the time.

While there is little evidence that survivors in a disaster area engage in exploitive behaviour in the early emergency period, the situation may be different somewhat later and as a variety of people from outside converge on the area. Outsiders are not preoccupied with fear and problems of survival, they are in a relatively unfamiliar community and so are less controlled by knowing and being known by others in the area, and opportunities for looting are often increased by the fluid and crowd-like situation. As might be expected, looting occurs under these conditions. There are reports of looting by civil defence workers in Great Britain during World War II, and by police and National Guardsmen following natural disasters in the United States. Gold teeth and jewelry were stolen from corpses, some of the jewelry being removed by cutting off a finger, following the Cameron Parish disaster in Louisiana (Bates *et al,* 1963). And there are some cases in which more systematic and large-scale looting has occurred—of generators, relief supplies, furniture, and so on.

Although concrete evidence is hard to come by, students of disaster believe that there is also quite a lot of *petty pilfering* or souvenir hunting following a disaster. This is typically carried out by outsiders, during the late emergency and early recovery period. This kind of activity can hardly be classified as malicious exploitation for personal gain, but seems to represent the rather child-like need of some people to collect objects, pictures, and remnants which symbolize an experience and may be shown to others.

There is another kind of exploitation which usually develops following a disaster, namely, that of *getting relief supplies, pay, and assistance* under false pretenses. Busloads of workers claimed pay for work they did not do. and individuals misappropriated relief supplies and equipment following the Cameron Parish disaster. Some people have reportedly gone to the emergency feeding centre for a meal when they had adequate supplies at home; others have gone from agency collecting goods of various kinds. This kind of exploitive activity tends to occur in the late emergency period while the various emergency agencies are operating without sufficient coordination. Should there be a real or rumoured threat of future privation and shortage of necessary supplies

it is likely that this kind of behaviour would increase in frequency, and it could develop into a black market phenomenon.

There is little systematic and verified evidence on the kind of exploitation which has been called *profiteering,* that is, behaviour which is designed to take advantage of the disaster victim's losses and anxieties for the exploiter's personal gain. However, there are sufficient reports of this kind of behaviour that it should be anticipated and controlled by the authorities. One difficulty with this kind of problem is that the business community operates on the law of supply and demand, and hence some raising of prices tends to be viewed as legitimate. Characteristically, business and professional persons are generous with their supplies and services immediately following a disaster. It is in the later phases that the law of supply and demand may get out of hand and result in open profiteering, to the disadvantage of the victims. An important cause of such behabiour is the degree of privation and threatened privation in the community following the event. Immediately after a natural disaster, the impact zone is typically flooded with goods and services, and there is no shortage of anything that most people could want at the time. However, as the urgent problems of the emergency period are handled and the survivors begin to face the full force of their losses and look to the future there may be a sharp rise in the demand for goods and look to the future there may be a sharp rise in the demand for goods and services which are in short supply. Moreover, if society at large is suffering from some privation, as is often the case during war, this will likely increase the incidence of various kinds of exploitation.

The Convergence Phenomenon

Disasters in North America are almost invariably followed by convergence behaviour, internal convergence as survivors move en masse toward hospitals, morgues, government offices, radio and TV stations, and to rescue, relief and other treatment centres; external convergence as people and supplies stream in from outside and as communication networks are jammed with enquiries and offers of assistance. The net result is a mixed blessing at best. The injured get to treatment centres, outsiders assist with emergency problems and the supplies are sometimes needed. However, there are invariably congestion and traffic jams which greatly hinder the development of organized and efficient emergency measures.

Convergence of people. The people who take part in the convergence phenomenon have been classified into five types according to their motives: the anxious, helpers, exploiters, returness, and the curious (Fritz and Mathewson, 1957).

(1)   *The anxious* are those people who are motivated by anxious concern for family members, relatives, friends, neighbours, possessions and property. Most of the people in this category are from the impact area itself, with a few more coming from the adjacent filter and fringe areas. They are often obsessed with the single purpose of finding a particular person and may be quite oblivious to other problems around them.

(2)   *Helpers* are the people who are moved by a desire to help the victims and assist in handling the many problems which have been created. A large proportion of the people in this catego-

ry come from the fringe and filter area adjacent to the impact zone. Others move in from further afield, and a proportion of the survivors assume this role after they have cared for themselves and their families.

(3) *The exploiters* are the people who move in from the outside with the purely selfish motive of looting.

(4) *Returnees* are the people who are motivated to return to their home ground. There seems to be a very strong tendency for people to return to their homes following a major emergency, whether it be in the form of war, air raids, floods or tornadoes.

(5) *The curious* are individuals who are motivated to investigate the unusual.

These different types of convergers tend to be active at different times following a disaster and individuals may move from one category to another. The anxious and the helpers are typically activated shortly after the impact; the curious may start toward the impact area soon after the disaster, but usually accumulate in numbers in the days following; the exploiters tend to move in during the late part of the emergency period; and most of the returnees come in during the late emergency and early recovery periods. When the anxious have satisfied their concern for family and friends, they often turn to become helpers and may go on to investigate the situation out of curiosity. And of course the occasional one may also become an exploiter.

The manner in which curiosity can lead to convergence is highlighted in the following example:

> A number of years ago, we had a number of firemen who were killed in the Harbour Fire Department, and there was a big mass funeral for them and burial, and lots of people— it was in the winter—came out there to stand around and watch the funeral. That was really a funny deal. There was not much you could do about it. There was a great crowd there and there was nothing but little holes in the ground that they could put the men in, but people, they were all concentrating around the one spot. I don't suppose there was more than five hundred or six hundred out there, but then the people began to press in, and when they pressed in close, the ones in front were getting shoved in the graves, and they began to holler and scream. Well, the more they hollered, the more the people in the back thought something interesting was happening and the more they pushed in, and the more they pushed, the more the guys in front hollered. Oh, boy it was a funny sight! Those crowds, they're crazy. I don't know what's the matter with them! We finally got it broke up [2]

The problem of returnees is rather unique in disasters. In the first place, it presupposes that there has been a relatively large scale evacuation of the area. In nearly all natural disasters which strike suddenly, such evacuation does not occur. However, when the disaster agent moves in more slowly, as is often the case with flooding, the local population may be evacuated. In other words, evacuation is usually a response to an increasing local threat, which can be avoided

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[2] From *The Formation and Nature of Crowds*, by W.A. Westley. Ottawa: Defence Research Board, Department of National Defence, 1956. p. 27. Used by permission

by moving out of the area. The condition of threat and danger is also the cause for evacuations in wartime. For example, 1,400,000 people, mostly women and children, were evacuated from English cities in the three days prior to World War II, and two million more silently left London during the blitz in 1940. A unique case in which evacuation occurred was that of Hiroshima: after the atomic bomb exploded over that city there was a mass exodus and the city was virtually emptied in a short time.

Whatever the conditions or timing of evacuations in the face of threat and calamity, the e-vacuees usually come streaming back to their home ground. Within four months of the beginning of World War II, 900,000 evacuees from British cities had returned to their homes; and within 24 hours of the atomic explosion over Hiroshima, a high proportion of the survivors had moved back into the city to take up residence in the debris. The battle for Casino, Italy, during World War II reduced that place to rubble and scattered its inhabitants far and wide. However, within a few weeks of the end of the battle the former inhabitants drifted back to live in caves, cellars and dugouts, largely without food or means of livelihood, and in an area that was highly dangerous because of malaria and 550,000 mines.

This tendency to return to one's home and to familiar ground is a powerful motive in man. Many people are at a loss in a strange environment, especially if they have few or no resources. In the absence of familiar surroundings of houses, corner store, friends and familiar faces, and a social system into which they fit, life losses much of its meaning and purpose. Although ours is a relatively mobile society to-day, the homing tendency is still very strong, and people will often go back to their home ground, although it be a disaster area.

Curiosity is another powerful motive behind human behaviour. Novel situations and strange events attract both animal and man to explore them. This is a very important and useful tendency, as it brings the individual in contact with a growing variety of situations and ideas and thus expands his adaptability. The strange and very novel usually arouses some fear and apprehension on the first exposure. However, with repeated exposure, this reaction declines until the individual pays little attention to the phenomenon. The strange phenomenon becomes assimilated and accepted, and it is precisely this process that enables young men to become doctors and face the distressing situations which they must handle in practice. In a like manner the curious and the sightseers who toured bomb-damaged areas in British cities and who go to visit a disaster area are probably gaining an experience that would render them less sensitive in a like situation.

While curiosity is a basic and most useful motive in man, it does lead to convergence problems of formidable proportions in disaster. Within an hour after the White County tornado, hundreds of automobiles began moving along the main highway into the disaster-stricken communities, and this flow of traffic continued for over one week. On Sunday, two days after the tornado, some 1,700 an hour took to the highway leading into one of the areas, and cars were reported lined bumper to bumper for 10 miles on either side of it. A second wave of cars began arriving in the evening with persons from more distant parts of the state and surrounding states. Following the Waco, Texas, tornado, the area was jammed with people, cars, airplanes buzzing overhead—almost stopping any effective rescue and relief work (Fritz and Mathewson, 1957).

Convergence of material. At the same time as masses of people converge on a disaster area, a flood of materials and supplies starts to occur. The day after the White County tornado, the most devastated town, Judsonia, was swamped with the influx:

> There was no place to put it....that created a big problem. We had a few headaches so much that was worthless rags. They had some pretty good ones. Somebody sent an old doggone big carton of falsies. We got a tuxedo, a nice one; it was in good condition. High button shoes and two derby hats. No work clothes to speak of....Unsanitary old mattresses full of bedbugs and torn up and smelled....well, when some of that stuff was hauled out and burned....there were rumours about how we were handling donated clothing....[3]

A large proportion of the material goods which are shipped into a disaster area are unsolicited. Much of it is useless at the time, although some would be welcome later on during the recovery period. The problem is that it comes in a most unplanned and uncontrolled manner: in one instance a freight carload of tomato juice, lumber, bedding, utensils, clothing, some sorted and labelled and much of it just junk, simply arrived on the scene. The result is an overload of goods, some useful and some not, which congests the area and requires the efforts of many of the emergency personnel to sort, distribute, and otherwise dispose of.

Convergence of messages. The problems created by the convergence of people and material goods is compounded by an overload of messages and enquiries on communication systems. Not only do large numbers of radio, TV and newspaper personnel move in—137 decended on Springhill in the 1958 mine disaster—but thousands of people from the outside send inquiries about the personal welfare of people in the area, and those within also seek to contract relatives and friends on the outside and to tell them about the situation. Following the Flint-Beecher tornado, about 115,000 inquiries were handled in six days. After the Texas City explosion which killed about 500 people and injured some 2,000 others, scores of inquiries were received about people who had never lived in that city but had simply not been heard from in years. One women wrote from Germany to locate relatives who had resided in Texas at some time but had not been heard from for 20 years.

A major factor which contributes to the communications overload following a disaster is the too early, ever-dramatic, inaccurate, and insufficiently specific information which the mass media put out.

Such reporting does not reassure, but arouses anxiety and urgency, often in people who have no real grounds for concern. In one instance, the fast "bulletin" reporting of an Air Force transport plane crash that killed only three men caused thousands of people to descend on the scene, creating a traffic jam that held up fire trucks and ambulances (Fritz and Matthewson, 1957).

While various kinds of external convergence are in the making following a disaster, internal convergence is creating problems within the disaster zone. There is mass movement of the injured, under their own power or assisted by others, to treatment centres, hospitals and clinics. There is a notable tendency to go to the best known hospital or clinic and to forget about others that

[3] FROM CONVERGENCE BEHAVIOR IN DISASTERS: A problem in social control, publication # 476, Disaster Study # 9, National Academy of Sciences—National Research Council, 1956, $2.00.

may be nearer or more approachable. In some cases, the less well known hospital has received virtually no victims while the better known has been grossly overloaded. At the same time, other survivors from the disaster zone together with people from the fringe area converge on hospitals, police stations, communication centres and morgues to take or seek information about the whereabouts and welfare of family members, relatives, or neighbors, or simply to offer their help or satisfy their curiosity. These convergers also tend to aim for the best known places to satisfy their motives.

Internal convergence, like external convergence, calls for the rapid establishment of control measures, with adequate communication between focal points of convergence and traffic posts. It is probably impossible to prevent some of the internal convergence, because the people who might institute such controls are also caught up in the immediate problems of rescue and care of victims. However, local emergency agencies might select personnel who would be least emotionally involved in a disaster and give them special training so that they could initiate appropriate control measures.

Mood and Morale in Disaster

Victims of disaster usually experience changes in mood and morale (see chapter 3) and these affect the manner in which the emergency social system develops and operates following a disaster. Knowing what to expect in this regard, we will be less surprised by what we observe, less inclined to think some reaction unduly abnormal, and we will be able to take account of such things in our planning.

The Disaster Syndrome. Wallace (1953, 1956) indentified a sequence of mood and emotional reactions which he called the *disaster syndrome.* The sequence occurs in four phases, each characterized by a different set of emotional reactions, moods, and attitudes.

(1) The shock reaction phase occurs immediately after impact of the disaster agent, survivors appear stunned, dazed, confused and puzzled, apathetic, and immobilized; they seem unaware of spoken words or of other events around them, and may wander about aimlessly or putter away at some irrelevant task. This is the shock reaction discussed in the previous chapter, and it lasts for minutes to hours. Apparently it may be prolonged by severe injury, probably because physical shock is added to the psychological condition. Survivors who suffer the shock reaction sometimes can do little for themselves and will usually be unable to help others and to participate in coordinated emergency tasks. The following quotation illustrates the problem:

>...on the lawn was a boy about twelve years old and his father was sitting by him. His head and upper chest were swathed in bath towels and he had a cut, very deep, extending from the vertex going down behind the ear and into the neck down into the chest...and then I told his father.... 'Your boy is terribly hurt, but not dead. Go up to the...those houses up there, and get somebody with a car, and put him in a car and get him to a hospital immediately because he's very seriously hurt; or if you can find a phone, call somebody; or anything you can think of to do, up there where these people aren't hurt.' And he left, and I got the kid's brother, who was sixteen, I would say, to sit by him and watch him if he started to bleed or anything like that. And then I went around the corner and here was the kid's father, talking with somebody in a friendly, neighborly sort of way, reminiscing or something; and I said to him, 'Can you go? And he looked at me almost breaking down and said, 'No, I just can't leave, I just can't bear it'.... As I would encounter people who were not hurt I would say 'Help me move some of these wounded people out,' and they couldn't. I would talk with them and explain what I had in mind, and they seemed to react and respond in a normal way, and then just stand

there or wander away, and nod their heads and not do anything. I wouldn't say that they were dazed, but they were not functioning;...[4]

The proportion of survivors who exhibit the shock reaction is not known. It is likely that both its incidence and duration vary, depending on the intensity of the impact in terms of destruction and deaths, the unexpectedness of the disaster, the suddeness of impact, and the individual's past experience in or training for such situations. The last-mentioned condition is most important because it indicates that individuals who have had extensive training in an emergency role like that of soldier, policeman, physician, fireman, or clergyman will suffer shock and recover more quickly than others. However, a few individuals may produce surprises. In the Springhill Mine Disaster the two miners who recovered most quickly after the collapse of the mine were unlikely candidates; one had spent time in a mental hospital, and the other was a relatively young and inexperienced miner. However, the former individual was an experienced miner and this may have contributed to his equilibrium, while the latter had learned independence and resourcefulness through difficult years on a farm (Beach and Lucas, 1960). Fortunately, the problems created by shock reactions tend to be short-lived because most people recover from them within a few moments.

(2) The suggestibility phase of the disaster syndrome comes next and is one in which people show extreme suggestibility, altruism, and gratitude for help, they minimize personal losses and show more concern for others, they are anxious to help, and they are very responsive to suggestions or direction. This phase may last for several days, and the reaction does not produce particular problems. A neuropsychiatrist described this phase of the reaction as follows:

...I am not sure whether this was apathy or not; it seemed more as though these people felt themselves a very small part of some one great thing. It was not a real apathy. People were extremely patient—not demanding, and seemed not to be focused on themselves.... A twelve-year old kid asked to have others cared for first.... the severity of the experience has numbed them down....My usual technique of kidding and trying to cheer people didn't work. These people did not respond. Children were helping (kept them occupied) and very grave—behaving like "miniature adults," no fooling among themselves.... It was such a part of such a big thing, there was a transient loss of individuality and identification with something else.[5]

(3) The euphoria phase is the third stage in the disaster syndrome. In it survivors display a kind of euphoria, happiness and optimism. They identify with the whole community and are enthusiatic and energetic in their participation in common helping tasks. They exhibit a kind of high morale, presumably because of shared feelings of risk, gratitude, and ability to survive under trying conditions. The mood that prevails is illustrated by events following the Vicksburg tornado in the southern United States: During the emergency period, human values underwent a dramatic change as white helped black and black helped white. There were no distinctions in admissions to hospitals, black and white were hospitalized in the same rooms and gave their blood side by side. Whites opened their homes to injured negroes, calmed and nursed them. Three weeks later, at Christmas, the community spirit was still strong, as the city fathers sponsored a mixed white and black religious observance.

Fritz (1961) has suggested that a community-sized disaster may have certain positive or therapeutic effects in so far as people do not take advantage of the losses of others with anti-social behaviour, but forget their differences and social conflicts, and make personal sacrifices for the public good by turning their efforts to socially reconstructive and regenerated behaviour. This hypothesis would seem to be largely true

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[4]From THE WORCESTER TORNADO: An Exploratory Study of Individual and Community Behavior in an Extreme Situation, Publication # 392, Disaster Study # 3, National Academy of Sciences—National Research Council, 1956, $2.50.

[5]From THE WORCESTER TORNADO: An Exploratory Study of Individual and Community Behavior in an Extreme Situation, Publication # 392, Disaster Study # 3, National Academy of Sciences—National Research Council, 1956, $2.50.

during the suggestibility and the euphoric phases of the disaster syndrome. Social differences and conflicts do dissolve, and survivors do emphasize the welfare of others and the public good. However, widespread altruism and community solidarity generally disappear after a few days or weeks and the fourth phase of the disaster syndrome takes over.

(4)   **The frustation reaction phase** occurs as survivors finally become aware of their losses and the difficulties which the future holds, they become touchy and irritable, express feelings of resentment, and are more liable to criticize and complain—particularly against the officials and agencies who are now in charge of dispensing relief and compensation. The unity and cohesiveness that characterizes the community in the euphoria stage gives way, not only to the old divisions along race, religious, and other lines, but also to new divisions—between the haves and have-nots. Survivors compare themselves with other survivors in terms of losses and suffering and amount of assistance received. For instance, when the mining company gave each of the miners who had been trapped a week underground a ton of coal as a kind of compensation, one man was omitted. He was annoyed, asserting that he should not have been denied the coal simply because he had taken the initiative and got a job as soon as he recovered from his ordeal. Real or perceived inequities can lead to conflict and competition, and if there is a shortage of essential supplies and materials for reconstruction, serious problems of social control and constructive cooperation may arise in this phase after disaster.

In general, the sequence of mood and emotional reactions which we call the disaster syndrome would seem to be a fairly "normal" response to changing events: shock and disruption of behaviour due to the impact of the disaster agent, gratitude and concern for others as a response to the realization of one's good fortune in escaping safely, euphoria and community identification as a response to the awareness of a shared fate and escape from it, and finally, reaction to the frustations and deprivations of the damaging consequences of the disaster. The problem is to use those attitudes and reactions which are potentially helpful and constructive, and to counteract and manage those which create social problems.

Effects of Recurrent Emergencies. Recurrent emergencies or disasters generally result in more permanent changes in mood, morale, and interpersonal behaviour patterns within a community. Humorous and heart-rending accounts of incidents, of suffering and heroism, become part of the folklore of the people. New practices and customs are developed to handle the emotional and material consequences of disaster. And community members develop a sense of pride in the fact that they live with danger and "can take it". Such a mood developed in beleaguered Britain, and especially bombed London, during World War II. A similar spirit, together with appropriate customs, evolved in the mining town of Springhill, Nova Scotia.

Springhill had a 90-year history of mining, marred by three disasters which took the lives of 239 men and buried 107 for several days. Another 193 miners died over the years in various accidents underground. As a means of cushioning the economic consequences of injury and death, a variety of institutions and practices were developed: a permanent disaster fund, six fraternal societies which provided widow and funeral benefits, an employee's relief fund, a check-off system for payment of taxes, medical and hospital services, church contributions, and funeral expenses—otherwise "who's going to bury you"? In addition to such institutions and practices, the people had developed a complex of attitudes involving fatalism mixed with humour, avoidance of thoughts of danger, and a certain pride in their dangerous occupation. Funerals were particularly important rituals, "the best" that could be provided. The people turned out in force, and were generous with wreaths and flowers. As one historian stated:

It may seem a strange matter for pride, but Springhill has always had time for its funerals, especially for those who have lost their lives in the mine... The Springhill Band, organized in 1879, served faithfully on these occassions with its beautiful funeral march filled with sweet high notes of hope and courage.[6]

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[6] From *Springhill: A hilltop in Cumberland,* by Barbara I Scott. Halifax: Atlantic Provinces Library Association, 1926. Used by permission.

It is noteworthy, however, that the institutions, practices, attitudes, and morale which developed to handle recurrent emergencies in Springhill proved to be liabilities in some ways when the community faced a different kind of emergency, in the form of sudden mass unemployment as the mine was closed and sealed. Economic compensations and a cohesive community spirit made it difficult for individuals to take the initiative in finding new jobs or moving to new places. Thus practices and attitudes appropriate for repeated crises may hinder adjustment to a new kind of crisis or to a more stable and peaceful environment.

Social Disorganization

Under "normal" conditions, an organization or social system has the capabilities for handling the needs and demands of its members and subunits, that is, it has an appropriate distribution of jobs, positions, and role behaviours for supplying the routine needs of the people and for handling the sorts of emergencies which are relatively common in the group. When a disaster strikes, two things happen: first, the demands are suddenly increased, especially on the system's emergency personnel and resources as scores of crises occur simultaneously, and second, the capability of the system may be suddenly decreased as a result of the loss of personnel, material resources, communications facilities, and records. In addition, the system is further strained if the crisis is such as to divert surviving members from their occupational roles and to focus their whole concern and attention on personal survival and care of their families. Because a disaster typically causes a drastic shift in the demand-capability ratio, the social system tends to collapse and the scene is one of apparent disorganization as individuals seek to handle the emergency as it effects them personnaly, with little regard for their organization roles and the overall situation. The problem then becomes one of re-establishing some semblance of a social system that will facilitate dealing with the many emergency problems.

Emergency Problems in Disaster. The emergency tasks to be handled following a disaster include the following: (1) rescuing victims and dispatching the injuring to medical centres; (2) providing psychological first aid and consoling victims; (4) organizing and directing systematic research; (5) clearing roads; (6) controlling traffic; (7) establishing and maintaining communications; (8) protecting property; (9) keeping unauthorized persons out of the area; (10) giving information to relatives and friends of victims; (11) bringing in and distributing equipment and supplies; (12) setting up a pass and identification system; (13) evacuating the area if necessary; (14) providing food, clothing, and shelter for victims and emergency personnel; (15) compiling records of the damage, injuries and deaths; (16) disposal of the dead; and (17) coordinating all of these activities.

The Emergency problems in most disasters are handled in a rather haphazard and disorganized fashion, at least for a period ranging from hours to days. Nevertheless, the emergency problems *are* handled and an emergency social system *does* evolve. Survivors often do much of the rescue work themselves as well as carry out some first-aid treatment and move injured victims to hospitals. Helpers move in from the fringe and filter areas and assist with these primary tasks. Local emergency organization personnel often pitch in with the survivors in doing rescue work initially, but gradually start to assume their normal occupational roles, whether that of fireman, physician, or minister. Small groups come together to attack common problems. However, it usually remains for emergency organizations from outside to come in and establish some kind of an adequate communication system, and to provide an overall appraisal and general coordination.

The three main problems in the development and functioning of an adequate emergency social system are: communication, coordination and control, and authority.

Communication. The breakdown of communications in disaster is one of the main causes of the collapse of the social system. Without some kind of adequate communication there can be no exchange and sorting of information, cooperative and group efforts are impossible, and anxiety and uncertainly cannot but prevail. The inevitable result is disorganization and confusion as individuals and small groups act largely without reference to what others know or are doing and without knowledge of the overall situation and its priorities.

In most disasters the re-establishment of adequate communications has been rather slow, for several reasons. *First,* the survivors and early helpers from adjacent areas generally become preoccupied with immediate problems of rescue and assistance and forget about the value and importance of communication. *Second,* there is often a serious lack of equipment and plans for re-establishing communications, even among emergency organizations which move into the stricken area. *Third,* there is nearly always a lack of overall planning and direction from a common headquarter, for hours and even days. Emergency organizations from outside have seldom solved this problem as quickly as might have been expected, presumably because no adequate and practised common plan had been developed before the event. *Fourth,* adequate procedures for collecting, sorting, storing, dispatching, acknowledging, and integrating relevant information have not been used. Each of these steps in the communication of information have not been used. Each of these steps in the communication of information is vitally important. The information which this or that emergency organization receives is too often a function of chance factors such as someone getting a message through either by word of mouth or over intact telephone line. The information usually has a note of urgency, and in some instances an emergency organization has worked for several hours in an area other than that which bore the brunt of the impact. Getting registration information from victims is sometimes handled in an inefficient manner. For instance, following the tornado in Wesley, the Red Cross caused considerable delay and mounting resentment by insisting on many details as they registered victims and allocated them to hospitals and shelters. The civil defence organization, on the other hand, required a minimum of information and as a result got many more people registered. However, their information was inadequate for a master list and for the receipt and dispatch of information to hospitals, to outside inquirers, and others. In other instances, information received has not been recorded and sometimes not even passed on to the relevant personnel. Finally, the indiscriminate dispatch of information and requests for assistance to the outside world have led to formidable problems of convergence of people and material.

The following measures would facilitate the development and functioning of adequate communications in an emergency situation:

(1) It would be important to establish a common information centre in the field headquarters that is responsible for overall coordination and control of the emergency operation. The kind of information which it will accept from personnel, groups, and control posts in the disaster zone should be planned in advance, with provision for flexibility. It should have the office equipment, personnel and other facilities necessary for sorting and storing relevant informa-

tion. And it should handle or at least control all information going to and from outside organizations. It may well be desirable to have key officials from the different emergency organizations in such a centre because they could presumably communicate more adequately with the organizations and personnel whom they know personnaly.

(2) Provision should be made to carry out an immediate appraisal of the overall situation in terms of rescue, search, medical transportation, and other needs and resources. If feasible, this would be facilitated by using helicopters, light planes, squad cars and motorcycles, all equipped with two-way radio. However, because some of these means may not be practicable on a large scale, alternative means must be planned and used. The use of direct personal observation, runners, and face-to-face communication of messages should not be neglected as out-of-date. Indeed it may be the only practical approach after some disasters. These methods were used extensively by the civil defence in Great Britain during World War II and proved very effective. Victims in the disaster zone may be of great assistance in surveying the needs and resources, because they are familiar with the locality, its facilities and population. The general plan should be to get the appropriate survey and communication personnel into particular areas of the disaster zone with the sole initial purpose of surveying the situation and reporting back to control centres.

(3) Experience with disasters indicates that local emergency organizations will neither have the equipment and personnel nor be able to set up the appropriate communication network following a major disaster. In view of this, a communication or signal corps should be prepared to move in from outside the disaster area. If they are to carry out the task with dispatch and efficiency, they must have some practical knowledge of the area and its resources and population. From this it follows that in planning for disasters emergency organizations with their communication corps and other units should be given first-hand knowledge and training for carrying out emergency operations in adjacent communities. The motivation and efficiency of such inter-community operations will be enhanced if key personnel in the various organizations have working and friendship relationships with one another.

(4) Plans should include measures to make maximum use of local emergency organizations and personnel as well as survivors and other helpers in the area. Local people will be more familiar with the population, facilities, and resources in the area, and hence can be an invaluable source of information; involving them in concrete tasks and bringing them into an organization will facilitate recovery from emotional reactions; integrating them into the emergency operation will reduce the number of people that are milling around in a rather random fashion; and local personnel may be especially helpful for screening and sorting victims and convergers, again adding to the development of a more controlled operation. It is notable that in most disasters to date, emergency organizations have not made adequate use of local survivors and helpers.

(5) Because of the potential loss of personnel and equipment in the impact of a disaster, it is essential that all emergency organizations have alternative resources of personnel, equipment, locations for headquarters, and even runners. It should be pointed out that the use of youths in their middle and late teens has largely been neglected as a source of personnel in

natural disasters. However, they have often made a significant contribution in war; they were used by the civil defence in Great Britain; and they may well be less tied by family roles than are many adults.

(6) In many natural disasters communications personnel have seldom planned and provided adequately for the informal communication needs of the victims and of enquirers from outside. The result has typically been a gross overload on communication facilities, and when people could not contact family members and friends by such means they often joined the convergers. This problem should not be neglected in planning for communications in an emergency.

(7) Communication of information to the outside world by television, radio, and newspaper has often left much to be desired. The tendency is to stress the unusual, the dramatic, and the bizarre, to send out unconfirmed and partical information, and to be insufficiently specific and concrete. Fritz and Mathewson (1957) suggest the use of telecast maps with specification of areas by street, T.V. documentaries to reduce curiosity, and sufficient delay in making public announcements so that the information is confirmed and complete.

Coordination and Control. The second major problem in the development and functioning of an adequate emergency social system is that of coordination and control. The problems here are often coincident with those of communication. However, additional problems are involved, notably those of collaboration in the division of responsibility and labour, and in the control of traffic and movement.

The lack of coordination that often prevails following a disaster is illustrated by the following examples. More than a week after Hurricane Audrey devastated Cameron Parish in Louisiana, the new civil defence administration for the parish was unaware that state civil defence officials were operating out of an office in the same building; outside helpers were being hired by the hundreds to work without any supervision; and supplies and equipment were being purchased and brought in by almost anyone (Bates,et al, 1963). After the Baxter disaster there were 2,000 homeless. However, the Red Cross, on the basis of its experience with similar situations, estimated that few emergency beds would be required and set up only 150. At the same time, two other agencies also set up 150 beds each. In the end, only 20 of the 450 emergency beds were used by victims. What happened was typical of natural disasters: the homeless were taken in by friends and relatives. As another illustration, women's organizations set up emergency feeding centres and provided some 2,000 meals, but almost all of these went to voluntary relief workers. In another case, the Mayor of Fenton, five miles from Baxter, visited one of the hospitals about one hour after the tornado has struck and perceiving a mass of people on the hospital grounds decided that the hospital was in trouble and would need blood. In fact, the medical operation was well in hand, with adequate supplies, and casualties were sorted out on the hospital grounds. However, the Mayor asked the local radio station to appeal for blood—at about the same time that a Red Cross volunteer did. Within one-half and hour, 2,000 people descended on the hospital to give their blood. Although the hospital needed no blood, the doctors and staff felt obliged to respond and organized teams to take blood; in the midst of an emergency "The bleeding went on for the better part of the night..."

The main causes for the above kinds of errors and inefficiency are lack of communication, lack of a clear division of labour and responsibilities, and lack of an appropriate hierarchy of authority—all essential elements for coordination. The result is not only gross inefficiency, but serious side effects may occur as emergency organizations, local and from outside, sometimes get involved in competitive struggles for status, power and "ownership of the disaster". Following the tornado which struck Baxter, the Salvation Army was the first emergency organization to start operating in the field. They located in a large tent in the heart of the area and this became the focal point where people congregated. One Red Cross worker remarked to another who was waiting in line for lunch at the Salvation Army tent, "Well I see that you are eating at our competitors" (Rosow, 1955, p. 148). But what were they competing for? Probably for the informal rewards of recognition and gratitude. Indeed, this was forthcoming: the police and other disaster service groups in the area collected money and donated it to the Salvation Army as an expression of their appreciation, but no similar collection was made for the Red Cross. In another instance, the American Red Cross and the Civil Defence had a direct confrontation in the days following the tornado in Wesley. The conflict developed into an open power struggle, without reference to the needs and problems of the disaster victims. It reduced to a battle between the experienced, nationally directed Red Cross arguing its case on the basis of precedent and contract, versus the new, local, and inexperienced civil defence which was seeking to establish its place in disaster services. The case was settled eventually by formal arbitration before the overall Emergency Disaster Committee.

While it is highly desirable to establish a single and well integrated hierarchy of power with laid down divisions of responsibility of labour, this is not always simple to do. First, to be done effectively it would have to be accomplished before some disaster strikes. If jealousies and competition for status can break into the open under emergency conditions. they will be more difficult to handle at other times. The problem is essentially that of separating out considerations of social politics, status, power and influence, and making integration decisions on the basis of resources and competence. However, we cannot ignore the subjective element in judgement and the realities of social life and compromise is often necessary if anything is to be done. Even if we could set up the ideal authority system, from some rational viewpoint, it would not solve the problem entirely. A designated authority will only be an effective authority insofar as it is accepted and viewed as such by the people. This kind of authority is typically attained rather than legislated. If people are in the habit of looking to the Mayor of a community for major decisions, he is the effective authority. If the St. John Ambulance has built up an image of leadership and authority in emergency situations, the people may not switch easily to accept another organization in that role. Integration of the "services" will not come easily, and conflicts may break into the open in the midst of an emergency. It would be important to work through such problems over some period of time on a person-to-person basis—before disaster strikes.

Control of the movement of people and materials is a major problem in emergencies. The common method of controlling traffic, and that usually preferred by the police, is to establish road blocks. However, this serves a limited purpose, unless there is also adequate provision for selecting the people, equipment and supplies which should in fact be allowed through. In other words, the purpose of controls is not only to stop traffic but to direct it in the most functional

manner. Another means of implementing traffic control is to utilize a pass system. In instances in which pass systems have been tried, insufficient account has been taken of the needs of official emergency organizations, the systems have usually been instituted too late to make much difference, they have typically been handled by an organization from outside which is not in a position to do adequate screening, and there has sometimes been insufficient coordination of the pass system—in some instances as many as four independent organizations were issuing passes.

No easy solution to the traffic problem has been developed to date, However, it is assuredly essential to establish traffic control posts at selected points on the periphery of the disaster zone and within it. Provision should be made for screening and sorting people at these posts and local personnel may be very useful for this purpose. In addition, a coordinated pass system is probably indicated. Traffic control posts should, or course, be in constant communication with the relevant section of the field headquarters.

Control of the movement of materials and supplies presents problems like those involved in traffic control. Again, collection and supply stations should be established as early as possible following the impact of a disaster, with the major ones being set up in the fringe or filter area. Victims and helpers would be an invaluable source of personnel to work on the sorting and handling of such materials.

Authority. Some of what was said above about coordination and control applies to the problem of authority. However, a number of additional points warrant discussion. Who or what organization is the legal authority in disaster? Is the legal authority qualified for this responsibility? Does the legal authority coincide with the de facto or ''real'' authority?

In Canada, the elected civil officials are the legal authorities in case of disaster. This gives rise to two problems. First, the people may be largely unaware of this arrangement—even persons who are members of emergency agencies. Moreover, people behave more out of habit than according to some rule or instruction, especially in an emergency situation. While people may look to elected representatives in civil matters, they probably regard emergency agencies like the police or St. John Ambulance as the authorities in emergency situations, and would respond accordingly.

The second problem is that elected officials are often not qualified in terms of training, experience or personal qualities to take command and give leadership in an emergency situation. They are usually selected on the basis of their status, their skill in placating people and working out compromises, and their ability to deal with and maintain the status quo—rather than their competence in coping with crises. As a result, though they be the legal authority in disaster, they may foil in the discharge of this responsibility or simply be by-passed by some other organization or group of citizens.

There are numerous examples of the authority problem in the research literature on disaster.

(1) Following the Halifax explosion in 1917, local government officials set up a number of special committees but these were so ineffective that an ad hoc Citizens' Committee was esta-

blished, with no city officials on the executive, and in a headquarters removed from city hall. E-
ven then the emergency operation continued to be disorganized, until the experienced American
Red Cross unit from Boston arrived on the scene. Within 12 hours a practical emergency plan had
been worked out, with sub-committees in charge of specific emergency tasks like food, clothing,
shelter, medical relief, burial, and so on. The authority of the civic government was temporarily
reduced to "providing the stiff formality of proclamation to the carefully weighed suggestions
of the Citizens' Committee....(Prince, 1920, p. 104).

(2) The Holland flood disaster of 1953 also illustrates the problem of authority in an emer-
gency. Local polder boards, headed by a dyke-reeve, have control over the dykes in the communi-
ty. The position of "dyke-reeve" carries with it considerable status and prestige, and the duties
are largely organizational and administrative. Probably because most communities had not expe-
rienced a serious flood since the sixteenth century, the dyke-reeves had generally failed to learn
about tides and water levels. Local government officials were likewise unprepared by training,
experience or role expectations to give leadership in a flood emergency. The net result was that
the rising water was largely ignored by government and dyke officials, people were not given ade-
quate warning, and little organized action was initiated to delay the flood. In a few instances lo-
cal government officials effectively took charge of the recovery effort, but in others they abdica-
ted much of their authority—and a few suffered from disabling psychological symptoms. (Nauta
and van Strien, 1955).

(3) Effective and ineffective local government authority was illustrated side by side in a
river flood disaster on the border between Mexico and the United States (Clifford, 1956). The po-
sition of Mayor in the Mexican city was usually filled by an individual on the basis of his power
and friendship connections and as a reward for past favours to the state governor. Although early
warnings were issued by the weather bureau, the Mexican Mayor took no action till thousands we-
re trapped by water, and his office did nothing to help the 25,000 refugees in the hills until the
army commander and state governor arrived on the scene. By contrast, the city administration in
the United States community across the river, headed by a professional city manager, issued an
effective early warning and directed an efficient evacuation and relief operation.

The problem of overall authority and responsibility in disaster is a particularly difficult one
in a democratic society. Elected officials are selected on the basis of qualities which may ill-
prepare them for leadership in an acute emergency, the social and political demands of their offi-
ce leave little time for serious consideration of the problem, and they may not be inclined to ac-
cept information which signal a threat to the social structure that elevated them to high position.
Nevertheless, the problem must be faced, and especially by civic officials because they may be
responsible *for* the people. It is essential that civic officials join with disaster agencies in plan-
ning for emergencies and work out practical divisions of labour, responsibility and authority.
There must be provision for adequate communication, before an emergency and in the warning
phase as well as after impact. And such plans and communication must be practised—or they will
be meaningless.

Maintaining Organization in Disaster

How well an organization or social system stands up in disaster will be a function of two kinds of factors: first, the particular effects of the disaster in terms of destruction and damage, injuries and deaths, and shock effects upon individuals; and second, the nature and extent of the organization's resources for emergencies. The first factor is that which both determines the emergency demands on individuals and organizations, and reduces their capability to handle the demands. It is essentially a "given" factor, set by the nature of the disaster event, and cannot in itself be controlled. It is only useful to consider it as a means of predicting consequences like damage and shock effects, and this is largely a matter of the amount of energy input per unit of time. Thus it can be predicted that nuclear explosions would produce more destruction, death, and shock than tornadoes, and hence a greater strain on the social system.

The other determinant of an organization's response, its resources for emergencies, is more important from a practical viewpoint because it can be altered. Following Haas and Quarantelli's (1964) analysis, an organization has resources of two kinds, internal and external. Each of these can in turn be broken down into three categories: material resources, information resources, and human resources.

Information resources refer to such things as policies and plans for handling special problems and emergencies, knowledge of the whereabouts of alternative sources of material resources, and records of the working knowledge of organization members as acquired through practice drills. When such information includes an intimate knowledge of other organizations' policies, plans, and material and human resources, the alternatives available to an organization are greatly increased.

Material resources include such things as communication equipment, power supplies, transportation facilities, office supplies, rescue, first-aid and hospital equipment, alternative supplies and sources of these. They are internal resources if they belong to the organization, and they are external if they are procurable from other organizations or communities. Alternative sources of such things are especially important in disaster.

Human resources are all those special characteristics, skills, and role behaviours which members of the organization have available, as well as their interpersonal relationships which may have a bearing on how they will respond to an emergency. These include special training and experience in things like rescue, first aid, fire fighting, and communications. With respect to the factor of interpersonal relationships, if these are formal, inpersonal and competitive, members will be less likely to think of fellow-workers under the stress of disaster. If individuals have no personal attachment with other members of the organization, they may be less inclined to stand by their organization roles and stay on the job. Moreover, there may be a carry-over of formal and impersonal attitudes into their dealings with disaster victims and those who converge on the scene, with less than positive results. For example, it has been observed in some cases that survivors are more responsive to and appreciative of the informal and friendly Salvation Army workers than they are to police and military personnel.

External human resources are made up of the knowledge, skills and role behaviours which are potentially available to an organization, from other organizations or communities. These are often crucial in a disaster because organizations in the impact area may find their own human resources seriously depleted and disorganized. In most natural disasters, local emergency organizations have been in this position, and have had to call on police, Red Cross and such agencies from neighbouring areas. Unfortunately, external human and other resources are not always called in immediately following a disaster, generally because of lack of communications and also because the local organization members get so involve in primary emergency tasks of rescue and first aid that they neglect to call. Moreover, when emergency organizations from outside the disaster zone do move in, there is often too little coordination with local units. There is also

a tendency on the part of emergency and other organizations in a disaster area to overlook possible ways of using the flood of helpers and other convergers that typically move into the area. These deficiencies in the utilization of all available human resources can only be remedied by appropriate planning and practice drills.

Another aspect of external human resources is the pre-established interpersonal relationships which exist with other organizations and social systems. Formal business and working relationships will form some basis for communication and for offers of assistance. However, it has been found that much of the mutual helping and coordination between organizations that develops following a disaster is based on the pre-disaster network of personal acquaintances and friendships. There is a very strong tendency under emergency conditions to think of and to respond to those with whom one has a personal involvement.

A major problem in the utilization of internal, and even external human resources is the tendency of individuals to neglect their organization duties and roles and to adopt family and general helper roles. If this occurs on a wide scale, an organization cannot respond in the coordinated and effective manner that would do so much to alleviate the general emergency. There are, however, a number of measures that would help members to retain their organization roles and so enhance a coordinated response:

(1)   Increase the visibility of organization personnel, with distinguishable uniforms and badges, so that they will be recognized by one another and by community members as individuals who should fill particular positions and roles. This will help to exert group pressure on them to fill those roles and stay on the job.

(2)   Ensure rapid and unambiguous communication so that organization personnel may be reassured of the location and safety of family members.

(3)   Train organization members and emergency personnel in a way to increase their sense of obligation to organization roles. The cultivation of small-group loyalties among organization personnel will tend to increase personal involvement and loyalty to one another. A small group whose members have undergone training together, carried out challenging and strenuous tasks as a unit and who have faced common dangers are typically more resistant to fear, confusion, disorganization, and other emotional upsets in the face of danger and stress. Apparently strong identification with small groups enabled the German Army in World War II to remain organized and relatively efficient in the face of great numbers of casualties and numerous retreats over hundreds and thousands of miles.

(4)   Provide for the care and welfare of the families of key organization personnel in the event of an emergency. In many respects this practice is followed by the Armed Forces now. Such a policy might be difficult to implement in the case of disasters—especially nuclear disasters. The rest of the population might resent the "preferred treatment" which such families received. And if the protective measure were evacuation, people would probably interpret information of such a move as a critical warning signal—and possibly start heading out themselves. One solution would be to move such families in the early phases of any evacuation. At the very least, provision should be made for informing key personnel of the welfare of their families. Unless some adequate and credible measures are taken, they will suffer conflict and impaired efficiency, leave their posts, or take their families with them—as physicians took their families to the hospital following the first shock waves of the 1964 Alaska earthquake.

(5)   Select key organization personnel who do not have close family ties. Individuals who are not married and have no children are more likely to respond in terms of their organizational or professional roles than persons having such family ties. For instance, a priest may step into the role of pastor earlier following a disaster than a clergyman with a family. However, this criterion for selecting key organi-

zation personnel has limitations. Experience, training, and competence are also essential requirements, and most candidates with these will be mature adults and hence probably have families. Moreover, it has been found that, after disaster victims have established the welfare of their families, it is generally men with family ties who then go on to participate in community emergency work. Nevertheless, given candidates who are equal in other respects, it may be indicated to choose those without close family ties for particular jobs.

(6)   Finally, recruit key personnel from a wide area. The purpose here is to reduce the proportion of casualties amont key personnel and to increase the probability of their adopting the appropriate organition role. Moreover, when a disaster strikes, those members from outside the disaster zone are not only likely to respond to their organizational roles as such, but to be motivated by their personal relationships with personnel in the disaster area.

The problem of precisely what structure and characteristics of an organization or social system make it functional and efficient in disaster has not been extensively analysed to date. However, we do have some evidence from the tornado studies by Form et at (1958). Five general characteristics are important: (1) ease of identification of the emergency organization members by survivors and others who move into the area; (2) the general image of authority, reliability and helpfulness which the organization has in people's minds: (3) the organization's ability to fit in with the rescue work which is being carried out survivors and to utilize volunteer helpers: (4) the organization's ability to cooperate with other organizations; and (5) its ability to carry out a general appraisal of the situation and to establish an overall organization with appropriate communications.

Organizations which were judged to be least effective in disaster work had the following characteristics: (1) they were new to the community in the sense that the residents were unfamiliar with them and had no particular expectations concerning them; (2) the organization lacked real internal integration, apparently because it was composed of members with a variety of values, assumptions, biases, competencies, and purposes in being members of the organization; (3) they had a considerable number of personnel who belonged to them with the purpose of maintaining or enhancing their personal status in the community; (4) they had little or no history or tradition of dealing with disasters; (5) they were often dependent on other organizations to carry out their plans; (6) their leadership was largely elected or composed of semi-professional persons, often chosen because of social status rather than on the basis of competence or the job; (7) their membership, largely volunteers, did not have sufficient training and discipline and often improvised action rather then acting according to organizational roles; and (8) their personnel were often involved in the immediate consequences of the disaster.

It should be emphasized that we do not have sufficient knowledge of the organizational structure and other characteristics as these effect performance under disaster conditions to give firm answers to practical questions. Indeed, it is highly probable that different organizational characteristics and personnel attitudes are called for in dealing with different problems. For instance, a somewhat detached and authoritarian organization may handle traffic problems better than one that is inclined to be understanding and democratic and to deal with every individual problem. In a similar vein, the handling of medical problems may be expedited not by seeking to use volunteers but by keeping them out of the way. The issues are further complicated by the fact that what will work for one population may not for another because of their differing experiences and expectations. The feelings and attitudes of the local population, especially of the victims in disaster, cannot be ignored. The problem is to work out organizational systems that will best accomplish their particular tasks under the conditions and with the given population. This is clearly a problem for detailed investigation and analysis.

Virtually all studies of natural and wartime disasters do point to the need for an extra-community disaster-oriented organization made up of full-time and well-trained personnel who will move into a stricken community in an emergency. Such organized, well-planned, and trained assistance is virtually necessary in some situations and will at the very least facilitate the handling of emergency problems and eventual reco-

very. It is also desirable that such an organization should have two major arms: first, a group of personnel which will move in to assist with the basic rescue operations, and second, personnel that will move in with the sole and primary objective of carrying out an appraisal of the situation and of establishing an overall organization and communication system. Such an emergency organization will be more viable between disasters and more effective in the emergencies if it is organized around small groups or teams of specialized personnel. Selection and training of personnel should be based on an analysis on the tasks, conditions, and population with whom they may be working.

Leadership in Emergency Situations

Practical Leaderships Problem in Emergency. Emergency situations like those which occur in disasters present special problems as far as leadership is concerned. First, the immediate needs and goals of the survivors are concentrated on such things as rescue, treatment, search, and evacuation Second, there are special problems of uncertainly, apprehension, and anxiety, which must often be dealt with on the spot. Third, there is usually a unique and rather formidable mass of difficulties which hinder survivors from attaining their goals, like lack of communications, transportation facilities, first-aid medical service. Fourth, the survivors have a great sense or urgency and hurry, they cannot wait but must have and make immediate decisions. Fifth, after the shock effects have worn off and survivors have got their bearings, they are typically very susceptible to leadership. In effect, they are in a partial vacuum as far as having familiar cues to guide behaviour, so that they respond to any definite cue. As a result they tend to be very suggestible and will often respond to any direction and leadership. Sixth, there is often a great lack of official leaders, because they have been killed, injured, or incapacitated by shock.

It is difficult and often impossible for a group of people to behave in an organized and purposive manner without a leader. When this does happen, it will be found that the situation is familiar and stable, that each individual's role is well defined, and that the "rules of the game" are well know and accepted. The extreme form of well-organized but leaderless group behaviour displayed by ants is a function of the fact that each ant's behaviour is strictly pre-determined by instinct. However, animals higher up in the scale of development have less instinctive behaviour to guide them, and those that congregate in groups, like the bufallo, typically have a sentinel or leader. It is notable that the herd leader assumes the leader role primarily in times of danger or in emergency. Man presents the other extreme from the ant, with virtually all of his behaviour being learned and rational. In place of instinct to guide his behaviour in groups, he has developed roles. These enable groups of people to behave in some work and play situations essentially without a leader. However, if something goes wrong, such as loss of some members or other resources, change in the situation, or deviation from role or rules, as in a game, the group has to readjust to the situation. Presented with such a problem, the group leader is activated to take the initiative in handling the problem. If he does not act, someone else usually assumes the initiative--and we have an emergent leader. It is in conditions of stress and danger, and when things are in a state of uncertainty and change, that the problem of leadership comes to the fore. In other words, leadership is a key problem in the emergency situations.

A leader may be defined as one who assumes the initiative in handling the problems which a group of people face, and is accepted and followed in that role by members of the group. A traffic jam is a situation in which a group of people are presented with a common problem. It can often be handled only if some person assumes the initiative in sorting out and directing the behaviour of those involved; this will often be a traffic policeman, the designated and official leader for such situations. However, if no policeman is on the spot, the problem will usually be handled more efficiently if someone steps out and assumes the role of

leader and director in the situation. If an outbreak of cheating occurs in a school, the social system of the school in presented with a problem. The principal, as official and designated leader, typically assumes the initiative in sorting out the problem and re-establishing appropriate behaviours. If he does not rise to the occasion, usually another teacher, and in some cases a student, may assume the initiative in handling the problem.

These two examples point up the fact that there are two kinds of leaders; the official, designated, and already recognized leader, and the informal emergent leader who assumes the initiative and becomes the *de facto* leader in a situation. When a group of people are presented with a problem they generally look first for guidance and leadership to the man who has been officially designated as leader for such problems. However, this will happen only if the information is available to group members and if they accept and have some confidence in the leadership capability of that individual. In other situations they will look to those individuals who have acted as leaders under other conditions—for example, they may look to a policeman for leadership when faced with an acute maternity problem, although dealing with such situations is not part of the prescribed role of the policeman. If no obvious leader is available, generally some member of the group emerges as leader, by assuming the initiative in handling the groups' problem. Another condition under which an emergent leader appears is that where the official or other potential leaders fail to respond to the situation with appropriate leadership behaviour.

Leaders play a key role in the management of emergencies. The presence of a leader in a group reduces apprehension, anxiety, and uncertainty, diverts members' attention from themselves to common problems and what can be done about them, and facilitates the development of constructive coping behaviour. In the period immediately after impact of a disaster, leaders are important in forming up small groups to handle common problems of rescue, search, traffic control, and so on. As the operation develops, leadership on an organizational level becomes crucial for the establishment of communications and coordination of efforts. If the designated and official leaders, like the Mayor, Chief of Police, or Civil Defence leader, do not have the skills, knowledge, and personal characteristics which enable them to assume leadership under the circumstances, they will be ignored and bypassed. It is also necessary that the official leaders be visible and distinguishable so that survivors will recognize them as leaders and respond to their direction. When official leaders are not available, are not visible, or do not assume leadership, emergent leadership, emergent leaders usually take over.

There is nothing mysterious about the man who becomes an emergent leader and he is not one who is endowed with unique leadership qualities. Rather, he is a person who has the skills and ability which are appropriate to meet the needs and goals of the group at that time. In one disaster in which houses began to blow up as a result of gas escaping from faulty reducer-valves, delivery truck drivers became the effective leaders because they happened to have wrenches and knew how to use them to shut off gas valves in the houses. In another instance, when an airplane crashed at an air show, killing and injuring many spectators, the announcer utilized his strategic position and skills to control the crowd which was converging on the scene of the accident. When a group of miners were trapped underground in the Springhill mine disaster the man who became leader of the group while they waited for rescue had the special characteristics which served to meet the needs of the trapped man, their needs to remain hopeful, to control their emotions, and to get along with one another, and to share their meager supplies. The leader in this case was a man who remained optimistic about their chances of survival, he had a resonant speaking and singing voice and used these to persuade and to console his fellows, and his physical strength held out. These examples illustrate the point that leadership tends to be specific to the needs of the situation. Moreover, it is not always necessary that the leader have all of the particular skills important to handle a given situation, but he should be able to recognize problems and also to know who among those with him have the relevant skills and be able to direct them to handle the problems in question.

In an investigation of small groups, Bales (1950, 1958) analysed the behaviour and interaction of members and found that there were three main dimensions of behaviour which were displayed by the leaders

who emerged. The first kind of behaviour was *activity,* in terms of how much the individual talked and behaved. The second kind of behaviour was *task ability,* that is, the individual's contribution of good ideas for solving the group's problem. *Likability* was the third kind of behaviour, as measured by members' ratings of the individual's likability and their tendency to respond positively to his contributions. Bales concluded that small informal group leaders could be divided into two broad types: first, the task specialist, the man who is high on activity and on task ability ratings but less high on likability; second, the social specialist, the man who is high on likability but less high on activity and on task ability.

This analysis of leadership into two broad types is consistent with the view that any group or organization has two main problems to solve: the achievement of the task purposes for which it exists, and the provision of sufficient personal satisfaction to group members so that they stay together and work together. Occasionally, an individual may be high on all three dimensions of leadership behaviour and be able to fill the role of leader in both a task-oriented and in a social-oriented situation. Bales has referred to this kind of man as "The Great Man".

Bales' analysis of leadership has proved to be correct in a number of real-life situations. In the Springhill mine disaster in 1958, two small groups of miners were trapped at different locations underground for approximately a week. For the first two or three days of entrapment, the men in both groups sought to find and dig their way out of the mine. This was a period of intense activity, focused on the objective task of escaping from the mine. Recorded interview with the miners after they were rescued revealed that one man emerged in each group as the leader, as defined by the extent to which he initiated more searching and escape activity than any other man in his group. When the trapped miners had explored every possibility for escape and could find no way out and when their meager supplies of water and light had been used up, they congregated in their respective groups to wait for rescue. Now the groups' goals and needs were different: they were no longer focused on a specific task but involved social and emotional problems of getting along well together, controlling their emotions, sharing what supplies they had, keeping up their hopes, and trying to communicate with the outside world by hammering on a ventilator pipe. In each of the groups the men who had been leaders during the task-oriented period became followers while new men emerged to handle the problems peculiar to the waiting period. The two sets of leaders were found to have contrasting personal qualities that apparently enabled them to play the required leader roles in the different situations. Task-oriented leaders were characterized by the following qualities (Beach and Lucas, 1960):

(a) They made direct driving attacks on problems.

(b) They perceived problems as involving physical barriers rather than interpersonal issues.

(c) They associated with one or two friends: the whole group was not their frame of reference.

(d) They were rather individualistic in their expressed opinions and actions, outspoken, and aggressive.

(e) They were not particularly concerned with having the good opinion of most others.

(f) They lacked empathy and emotional control.

(g) Their performance abilities were better than their verbal abilities.

The two leaders in the waiting period shared the following characteristics:

(a) They were sensitive to the moods, feelings, and needs of others, rationalizing and sympathizing with them when appropriate.

(b) They sought to avoid conflict and dissension.

(c) They were intellectualizers, using communication rather than action to satisfy the group needs, their verbal abilities being better than their performance abilities.

(d) Their role in the survival period was to a considerable degree a function of their need to have the general good opinion and recognition of the whole group, rather than the specific good opinion of a special friend or partner.

(e) They perceived themselves as making an important contribution to the group. (Beach and Lucas, 1960; pp. 138-139.)

The study by Bales and the findings in the Springhill mine disaster suggest that there are certain general kinds of behaviour which are characteristic of leaders in different kinds of situation. However, it should be emphasized that there is no one leader type that would fit all group and all situations. Rather, what man becomes a leader in a given situation will depend on the special nature of the circumstances. The following is a list of the factors which determine who will be a leader in a group at a given time:

(1) The group's particular needs and goals at the time, whether needs for reassurance, first aid, information, action, and so on.

(2) The nature of the situation in which the group finds itself, in terms of the problems and obstacles which stand in the way.

(3) The potential leader's ability, skills, and personal qualities which can serve the group's needs in that particular situation, meeting them directly or overcoming the obstacles which stand in the way.

(4) The individual's initiative and activity in contributing ideas to solve the problem and in following through with action.

(5) The individual's visibility, whether he can be seen or heard, whether he can be recognized as an official leader or simply distinguished from others. Uniforms and badges increase the individual's visibility, and it has been found that survivors in a disaster will often look for leadership and guidance to anyone who is wearing something resembling a mark of authority and expertise, such as an armband or hard hat.

(6) The person's ability to make decisions is an essential requirement in a leader, especially in emergency situations.

(7) The assumption of leadership by an individual will be facilitated if he was a designated and recognized leader in previous situations, or at least had some status in the group members eyes. Thus civic officials and police officers will find it easier to assume leadership in the appropriate situation than would the layman, simply because the group expects some form of leadership behaviour from them.

(8) It helps if the individual has a number of things in common with the group members, including such things as a common language, common past experience, and similar attitudes and values.

(9) The man who will be leader must have information about the situation and about the group members in terms of their special resources and skills and personal characteristics. Information about group members will not be so important in small and informal groups that form up to handle common problems in

an emergency. However, this kind of information is especially important in a larger group situation like that of a community, or when overall organization is being established following a disaster.

(10) The potential leader must have some ability to communicate, and he must be in a position to communicate. In small informal groups verbal and non-verbal communication of attitudes, understanding, varing, and positive expectations are important. In a more organized situation, the individual who is centrally placed in the communications network tends to behave like a leader. For example, in the previously mentioned airplane crash a local telephone switchboard operator became a leader in organizing medical first aid and police services by using her skills and her special position in the communications network.

(11) An important ability for the leader in some situations is that of being able to get group members to behave in a way that does not suit their immediate inclinations (MacCurdy, 1943). This kind of leadership is required in the Armed Forces, where servicemen must be led to face danger and take risks for an ultimate objective. This kind of leadership would be particularly important in shelter living, to get people to defer their immediate and urgent desire to leave the shelter, to look for someone, to use up all of the food, water, and supplies. The emergent leader who can do this must have special powers of persuasion and he must have quickly established the respect and confidence of the members. Official leaders and their followers in the Armed Forces develop this important ability to undergo immediate risks and privation for an ultimate objective by training and experience. Soldiers develop confidence in their leader to care for and protect them and not to let them down, through a series of experiences in which he demonstrates such behaviour. They learn that they can depend on their leader as long as they follow him faithfully, even through immediate risks and privations.

(12) If an individual is to retain leadership of a group he must be able to adapt to the group's changing needs and goals.

(13) Finally, the leader must have physical and psychological stamina, that is, have energy and toughness, and be able to stand up under privation, fatigue, conflict, and disappointments.

There are two ways of improving leadership: selection of those with the best potential, and training. The most reliable way to judge a man's potential for a given situation is to look at his history of performance in similar situations. The behaviours which should be considered include those which are mentioned above as the factors which determine leadership, such as skills, ability to communicate, ability to make decisions, and so on. Techniques of training will be treated in a later chapter.

Suggested Readings

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Chapter 5

RESPONSES TO WARNING AND EVACUATION

Summary

Adequate and timely warning is crucial for survival in many disasters. Defined as a signal or message which provides information about the existence of impending danger and what action should be taken, a warning alerts the individual to adopt an attitude of vigilance and arouses some level of fear. The whole warning process consists of seven phases: detection, evaluation, decision to warn others, transmission of warning, interpretation by recipients, feed-back about how it is received, and transmission of new warnings. Ten factors determine effectiveness of warnings: information in the warning signal, how warnings are reinforced, organizational encouragement to respond, credibility of the warning sources, strength of the fear message, the receiver's degree of personal involvement, availability of protective measures, cost of taking protective measures, receipt of confirming warning messages, and preparation and training. Evacuation or removal from the actual or potential danger area is an important response to warning. Evacuation may involve only part or most of the population, and be temporary or long-range. There are eight kinds of problems which should be anticipated in planning for evacuation: administrative difficulties, motivation of the population, accomodation in staging and reception areas, allocation and reception of evacuees, provision of service personnel, caring for children, problems arising out of personal differences between people, and provision of constructive activity for evacuees.

Definition of Warning

Most disasters have been preceded by a warning period of sufficient duration that, had all of the people in the impact area taken appropriate protective measures, the frequency of deaths, injuries, and cases of shock would have been markedly reduced. However, in some cases survivors reported that they had not noticed any signs of danger nor received warning messages; in others they have confessed that they did not take the signs seriously or did not know what to do; and in a few instances officials who had information indicating danger did not transmit it to the people. It is clearly important to understand the steps in the warning process and to know what factors determine the effectiveness of a warning message, because the warning period is crucial in determining the outcome for the population.

Warning may be defined as the transmission to people of signals or messages which provide them with information about: (1) the existence of impending danger, and (2) what action should be taken to prevent, avoid, or minimize the consequences of impact (Williams, 1964). The second part of this definition is designed to emphasize the point that, to be effective in altering the consequences of a disaster, the warning message must produce some appropriate behaviour on the part of the recipient. As Fritz (cited by Williams, 1964) has stated, a warning should be "a call to action". If it does not have this function, it might as well not have occurred.

The warning phase of a disaster may be relatively long or very brief and virtually non-existent. When the warning period is short, fewer people typically receive the warning signal or message and there is less time to get organized and take protective action. This is often the case when a tornado strikes; a person suddenly hears a roar or sees a spiral-shaped formation in the sky and has only seconds or a minute or so to prepare for the impact. The inhabitants of Hiroshima had no warning of an air raid when the atomic bomb exploded over that city, but did have a few seconds between observing the flash and the impact of the blast. A few people reacted quickly, throwing themselves to the ground and in some cases diving into a shelter, and thus saved their lives. When the warning period is very brief the effectiveness of the warning depends on four things: whether it reaches the people, whether it has a clear meaning and call for action to the receivers, the availability of protective action, and whether individuals freeze momentarily or take that action.

In the case of long warning periods there is usually a gradual build-up of warning signs from the first indications of possible danger through to some final signal just before impact. Long warning periods of this kind are characteristic of inland flood disasters. The Red River flood of 1950 developed inch by inch over a period of many days. The people in the threatened areas received precise information on the rising waters, and were instructed to evacuate when the danger reached a certain point. Tens of thousands were evacuated from their bombs and other places of business and work, but in a relatively orderly manner. Hurricane Carla advanced from the Gulf of Mexico over Texas at a rather slow pace again there was a fairly graduals build-up of warning messages until people were instructed to evacuate which some one and one-half million did.

Long warning periods have obvious advantages for the target population: warning messages may be delivered to a larger proportion of the population through various informal and formal

channels, there is the opportunity to get organized and prepare to take more effective protective action, and a major move like that of evacuation can often be carried out in an orderly manner. However, even with a long warning period, the warning system may be ineffective, for reasons to be noted later.

Reactions to Warning

There are generally two kinds of reactions to a signal which has any warning value for a person: an alerting or vigilance reaction, and a fear reaction. With vigilance, the individual "looks up", his attention is shifted from what he was doing to the warning sign or message, he scans his environment for further information, and in general he adopts an attitude of vigilance. There are two kinds of information which the individual seeks under such circumstances: first, further indications of warning, clarification of the nature of the danger, and what actions would be appropriate; and second, reassuring information which indicates that the signal was a false alarm, or that it was not meant for the individual in question.

The level of apprehension and fear which a warning signal arouses has a bearing on the vigilance reaction. If fear is very strong, reassurance is likely to be ineffective, vigilance will be exaggerated and rather undiscriminating, and behaviour is not likely to be adaptive. On the other hand, if the level of fear which is aroused is mild, vigilance will generally be moderate and reassurance will come easily. The nature of these reactions will also be influenced by an individual's susceptibility to fear: some will react with much fear to a weak warning signal while others will have a small fear reaction even to high threat signals. How much fear an individual exhibits is largely a function of his past experience, whether he has been sensitized or adapted to warning signs in general and especially to the kind involved in a given situation.

Although the vigilance and the fear reactions are "natural" responses to novel or strange stimuli, they are largely acquired or learned to stimuli that we classify as warnings. Thus it is not surprising that the vigilance responses which people have learned vary from limited and inefficient scanning to rapid surveying of relevant information and possible courses of action. Efficient vigilance responses may be thought of as habits which have been developed by training and experience—for instance, the vigilance habits of the well—trained sailor, weatherman, or radar man. It is notable that when an individual has good vigilance habits, together with knowledge of possible courses of action, he will not be so susceptible to the disorganizing effects of fear. In the extreme case where the warning period is brief, an urgent warning signal would constitute a clear "call for action", and any other vigilance behaviour would be short-circuited as the person immediately takes protective action. Others in this situation would be affected primarily by the urgency of the warning and may freeze momentarily or act in a disorganized manner. The only way 'to reduce such responses is with prior information and training.

Phases in the Warning Process

Williams (1964) has specified the steps in the warnings process as follows:

(1) Detection and measurement or estimation of changes in the environment which could result in a danger of one sort or another.

(2) Collation and evaluation of the incoming information about environmental changes.

(3) Decisions on who should be warned, about what danger, and it what way.

(4) Transmission of a warning message, or messages, to those whom it has been decided to warn.

(5) Interpretation of the warning message by the recipients and action by the recipients.

(6) Feedback of information about the interpretation and actions of recipients to the issuers of warning messages.

(7) New warnings, if possible and desirable, corrected in terms of response to the first warning messages.[1]

Detection. The information about changes in the environment which indicates danger is typically detected either by some official source or more informally by people who are sensitive to such things. The weather bureau is a good example of an official body which collects informatic : about tornadoes, hurrica-canes, blizzards and floods. However, it is often impossible for even such a group of experts to predict the point of impact precisely, and in some instances it has been individuals who were particularly sensitive to storms who informally warned a community of impending danger. Furthermore, most people do not act on a single warning message but seek confirmation, and many of them look to informal sources such as friends and neighbours, the police or civic officials—that is, to other people who are without primary information but who are trusted in some sense. The warning system may, or course, fail at this first stage, because warning signs were not detected or not recognized as such by one or another of these official and informal sources of warning information.

Evaluation. The second step in the warning process is that in which the information is collated and evaluated by some individual or organization that assumes or has responsibility for the matter. The chief problems at this stage are those of evaluating the reliability of the information, resolving the differences and contradictions between several sources of information, and estimating the precise implications of the data with a view to deciding whether a warning should be issued, to whom, how, and at what time. Quite often the person who must take final responsibility for the results of the evaluation and make a decision is someone ill-equipped to do so—such as the Mayor of a community. The warning process may bog down at this stage even when expert officials are responsible for the evaluation of the data. Prior to the Worcester tornado in 1953, officials in the Boston Weather Bureau did not use the word "tornado" in a public release until after the tornado which struck Worcester was actually dying out. Their failure to evaluate correctly the information that they had was apparently based on a number of factors: past experience contraindicated the occurence of a tornado in that part of the country, they could not be sure that their scientific information was right, and it seemed to be contradicted by the fact that the weather around them did not look so bad; they themselves did not receive reports of sighted tornadoes; and Weather Bureau policy at that time prohibited the use of the word "tornado" because of the unfounded fear that panic might result.

Decision to Warn. The decision to issue a warning of impending disaster may involve grave consequences. If the decision is not made and the disaster strikes, the impact may be much more destructive of life and property; if the decision is made and the disaster does not come off, the population in question will be put to a great deal of inconvenience, lost time and money, and will be subject to needless fear and anxiety. Either way, the decision-maker may be subject to criticism, guilt, and possibly loss of his job.

In some situations it is fairly clear what agency and officials are responsible for making the decision to issue a warning. The weather bureau may have this responsibility in the case of windstorms; civic officials like the Mayor may have the responsibility in case of other impending dangers; the Prime Minister

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[1] From Human Factors in warning-and-response systems, by H.B. Williams. In G.H. Grosser, H. Wechsler, and M. Greenblatt (Eds.), *The threat of impending disaster.* Cambridge, Mass.: M.I.T. Press, 1965. pp. 82-83. Used by permission.

of the country may have this responsibility at the national level in the case of a nuclear threat. In a number of natural disasters the decision to issue a warning to a particular community and population has been made by some person who, sensing the danger, took it upon himself to issue a warning.

Williams (1964) summarized the considerations which should go into the making of such a decision:

(1) Is the danger really going to materialize to a certain degree at a certain place? (2) When will it strike and how much warning do people need to take place? (3) When will be the consequences if it strikes and there is no warning? (4) Will it do any good to give warning? Is there time to take protective action? (5) How will people behave if they are warned? (6) How will people behave if they are not warned?[2]

These considerations make it clear that the decision makers must have considerable systematic and accurate knowledge not only about the disaster event with which they are concerned but also about human behaviour under disaster conditions. In the Worcester disaster a warning was not issued on the false premise that people might panic.

Sometimes the decision to issue a warning gets delayed or stopped along the channel of command. This happened with catastrophic results just before Pearl Harbour in 1941. Japanese submarines and aircraft were detected by radar operators and navy patrol vessels a good hour before the onslaught on Pearl Harbour, but no warning was issued. Apparently the personnel responsible for sounding an alarm would not do so without further confirmation from more senior officers. This was not forthcoming, and a false-negative decision was the result.

An important consideration in whether to issue a warning is the possible consequences of a false-positive decision. Not only may the decision makers be held responsible and be criticized unreasonably for the upset and inconvenience which they have caused people, but the population's sensitivity to warnings may be significantly decreased as a result of the false alarm. In the latter case, people may suffer on a future occasion because they disregard a warning that turns out to be valid. Thus decision makers are placed in a most vulnerable position. However, because false-negative decisions have such dire results, it may be best to err on the side of false-positive decisions. The negative psychological consequences of the latter can often be remedied to a large extent by appropriate publicity, official statements, and especially by a positive attitude on the part of citizens with leadership roles throughout the community, such as employers, emergency agency personnel, and other formal and informal leaders of various organizations and groups. In any case, it is essential that the appropriate and expert officials have unambiguous responsibility for making warning decisions, and that the public be made fully aware of who holds the responsibility.

Transmission of Warning. The next phase in the warning process is the transmission of warning messages to the public. Different channels of communication may be used, such as radio and television, telephone, sirens, loudspeakers, or door to door messengers. The use of multiple channels has the advantage that the message will reach a greater proportion of the population. On the other hand, such a massive onslaught of warning messages may produce excessive fear, increase the chances of contradictions and errors, and may call for more time and effort than is available. There is no one answer to these problems. It will depend on the nature of the impending disaster, the amount of time available, and especially on the amount and kind of preparation and training which the population has received for such an emergency.

Interpretation by Recipients. The next phase in the warning process in that of receipt an interpretation of the warning message by the target population and the action which is taken. A crucial problem here is that

[2] From Human factors in warning-and-response systems, by H.B. Williams. In G.H. Grosser, H. Wechsler, and M. Greenblatt (Eds.), *The threat of impending disaster*. Cambridge, Mass.: M.I.T. Press, 1965, pp. 87-88. Used by permission.

warning messages may vary from the clear, concrete, specific and consistent to the vague, ambiguous, general and contradictory, and they can mean different things to different people depending on their past experience and their local circumstances. Furthermore, the warning message may include no information about what action should be taken, erroneous or vague information, or clear and specific instructions. The content of the message and the kind of information which it conveys will be discussed in more detail in a later section.

Whether and how the target population reacts will depend on another series of considerations. For what kind of protective action is there sufficient time? How much cost is involved in taken protective action, in terms of leaving others and personal property, loss of time and work, and general inconvevience? And what is the extent of the estimated threat and cost if no counter-measures are taken? In a society where the individual is largely free to make even such crucial decisions for himself and his family, receipt of a warning message will initiate a complex evaluation process in his mind. Like the officials responsible for issuing the warning, he must make a decision, to act or not to act. The factors which enter into his decision and make the warning effective in evoking action will be detailed in the next section.

Feed-back and New Warning. The sixth step in the warning process is that of feed-back of information from the target population to those who have issued the warning. Was the message received? Are the recipients interpreting it as intended? What action are they taking? Unfortunately, provision for this step in the warning process has seldom been made, and warning officials have not even thought of it in many cases. In view of the problems of getting a message to all of the people, a message with the kind of information that evokes appropriate protective action, it is important to provide for this phase of the warning process. Appropriate feed-back will often call for the issuing of new and better warnings—the seventh and final step in the warning process.

Determinants of the Effectiveness of Warnings

When people receive warning signals they typically start to evaluate them informally in much the same manner that official agencies do when they collect information about a possible impending danger. They look to their past experience: What did the sign mean in the past? What were its consequences? Was the river ever higher than that before? They appraise the signal in terms of other perceptions which they are receiving at the time: Is the storm gathering, dispersing, or veering off one way or another? How are other people responding—especially people who are authorities, or who are significant in their daily lives? How strong is the threat—what are its probable consequences in terms of danger to life and damage to property? How much time is available before the danger strikes? What protective measures are available, and what can be done to reduce or protect injury, loss and death? What is the cost of taking protective action, in terms of time, effort, money, and personal inconvenience and sacrifice? If protective action is taken and the alarm turns out to be false or exaggerated, will the individual be derided and considered foolish by others, or possibly berated by his boss?

The various factors which enter into this evaluation process and determine the effectiveness of warnings have been isolated in experimental and field studies of disasters. Each of these factors should be given due weight in designing and operating a warning system. In some instances their use should be pre-tested to increase their effectiveness for particular populations and situations.

The information in Warning Signals. We tend to assume that information is information, and that signs and signals convey what they are intended to mean. This assumption is very often wrong, as one can confirm

by recalling the frequent misinterpretation of cues and words which occur during courtship and other interpersonal exchanges. The assumption is a particularly dangerous one with respect to warning signs of impending danger. Not only are the stakes often a matter of life and death, but a single warning message may be interpreted in different ways by different people, so that members of the population in question "get" different messages.

One problem is that a warning sign or message is seldom a unique input of information which results in a predictable output of behaviour. Rather, it is but one of many stimuli which the individual is receiving at a given time, within a context of particular circumstances. In addition, it is fed into a context of past experiences, which also determine its meaning and what response will be given. Just prior to Hurricane Audrey's onslaught on Lower Cameron Parish (Louisiana) in 1957, the Weather Bureau, unfamiliar with the local terrain, advised people in "low exposed places" to evacuate to "higher grounds". To the residents of the target area "higher grounds" meant the ridges six to twelve feet above sea level which traversed the area. This was not what the Bureau intended, and it proved to be inadequate as a protective measure.

It is a common observation that people interpret danger signs and sounds as some more familiar event. Survivors of tornado disasters have reported that they thought the roar of the barreling wind was of a passing train; in flood disasters, they have interpreted the sound of running water as an open water tap; residents of Springhill variously thought the underground bump in the mine was a bomb under a neighbour's house, a truck hitting the house, or children thumping upstairs; and some of the survivors of the Halifax explosion in 1917 thought that they were being bombed by German zeppelins. When the fire commissioner and acting director of civil defence in Chicago sounded the air raid sirens to celebrate the first American League baseball title that the White Sox had won in 41 years, over one-third of the people made the "mistake" of interpreting the signal as being connected with the ball game.

A second problem is that the warning signs and messages are often vague and ambiguous in themselves. This results in a variety of guesses and hypotheses, usually based on personnal past experience, which the individual must test and evaluate. One of the best examples of particularly vague danger signs was that of the effects of escaping carbon monoxide fumes in a factory in Chicago. This gas is colourless and odourless, so that first signs of its presence are a person's own reactions of headache, weakness, dizziness and nausea. However, such symptoms will usually be interpreted as signs of more familiar things like the flu, a hangover, or some other physical condition. A women worker reported the following series of hypothesis in that emergency:

> "At 10.30 I got a headache, a temple headache. I thought it was just a headache. I didn't pay any attention to it because I just thought I was hungry....But the nearer noon it became, the worse the headache got....but after I ate it continued to ache. I had taken two aspirins and I laid down for 30 minutes and I took a third and then a fourth aspirin....it got worse as the afternoon went on. So I didn't know what to think. The first time I vomited I thought there was a possibility of me being pregnant, but after everybody started vomiting, I knew everybody wasn't pregnant"![3]

In an atmosphere that is charged with apprehension and uncertainty, the hypotheses and guesses that grow out of unclear information may become dangerous rumours. When Port Jervis, N.Y., was hit by heavy rain storms from Hurricane Diana and then flooded by the Delaware river, the population was subjected to continuing anxiety and uncertainty because of the possibility that the huge dam above the town might break. In order to reassure them about this, the police chief issued a statement that the dam gates were going to be opened in order to reduce the pressure. This information proved to be ambiguous, confirming the people's expectations of the possibility of flooding, and rumours began to circulate that the dam had actually broken. At this point, the fire captain radioed this rumour to his headquarters to check on it, but when a

[3] From Disaster, by C.E. Fritz. In R.K. Merton and R.A. Nesbitt (Eds.), *Contemporary social problems*. New York: Harcourt, Brace & World, 1961. pp. 155-156. Used by permission.

number of other firemen heard the message on their radios, they assumed that it was true and immediately drove their firetrucks through town, sirens wide open, and shouting orders to evacuate the town—which a large proportion of the population did, in a near panic-striken flight (Danzig et al, 1958).

Another detrimental consequence of ambiguous and conflicting messages and warning signs is that official sources of information lose their credibility. This happened in Brighton, N.Y., following a series of explosions. The people did not know what had happened and why, and rumours circulated to the effect that hundreds of houses had already exploded and that a fire was raging inside the gas mains and might blow up the whole town. For a week or more the residents were uneasy and apprehensive, jittery and unable to sleep. Moreover, they would not accept the repeated assurances by the authorities that the danger had passed. Official information was no longer acceptable because it had been ambiguous and unreliable for predicting and preventing the danger.

There is no easy answer to the problems of the information value of warning messages. However, their effectiveness may be greatly improved by rigorous attention to a number of principles. First, the information should be accurate, specific and concrete, in terms of the target area and population, the nature and extent of the threat, the time available, and the kinds of protective action which should be taken. For instance, the area might be specified with a T.V. map or by names of streets; people might be instructed to proceed on foot to particular locations, or to open all doors and windows.

Second, the information should be related to local circumstances and the past experience of local residents. Thus local terrain, availability of shelters and emergency facilities, and people's previous experience of similar events should be considered in framing the message. Third, provision should be made for feed-back about how people are interpreting and acting on the warning message, with follow-up messages if indicated. Fourth, there should be planning and judicious pre-testing and rehearsal.

Reinforcement of Warning Value. A warning signal or message is designed to arouse vigilance and to motivate or evoke behaviour. However, there is nothing in the warning itself which is arousing and indicates danger. The power to arouse and convey a sense of imminent danger is an acquired property of warning signals, something that must be learned. It is therefore important to understand what conditions make a signal arouse, produce vigilance, and ready a person for action.

The meaning that a warning signal acquires depends on whether the message is confirmed or reinforced by painful and unpleasant consequences. "Don't touch" carries no force with the young child, until he touches and gets burned, or experiences slapped fingers or some other unpleasant consequence. Thereafter this message will usually have the desired effect. However, it must be reinforced occasionally or it will lose its meaning by the process of extinction. From such simple beginnings man acquires a complex repertoire of signs, gestures, and verbal messages that have warning significance in terms of unpleasant consequences. Many of these will never have been directly followed by negative consequences, but will have acquired their meaning by association with other verbal warnings, pictures of consequences, and so on. Thus a child or adult who has never experienced the dangers of war may still react with fear and vigilance to such a threat—by virtue of hearing and reading stories and seeing pictures of the consequences.

It is quite clear that previous reinforcement of the significance of a warning signal is very effective in making the warning a call to action. Individuals who have experienced tornadoes react to tornado signs and warnings without delay. After the atomic explosion over Hiroshima, the inhabitants of that city would scurry for shelters whenever any airplane flew overhead. Of the residents who fled from Port Jervis, New York, when the rumour spread that the dam above the town had burst, almost 90 per cent were those from the previously flooded area. On the other hand, there was widespread evidence in the cities of Great Britain during World War II that the warning sirens and even airplanes overhead lost their power to evoke protective action for most of the people, because they were not followed by personally involving negative consequences.

A major difficulty with warning signs and messages about disasters is that their evocative meaning is weak because most people have either not experienced them before or at least have not experienced them in association with the consequences of a disaster. The problem is made more difficult by the fact that people have heard and read about disasters, but having not experienced the consequences; they tend to develop indifference and feelings of invulnerability—as did civilians who had only remote-misses in bombing attacks during World War II. They become adapted to warning signs and ignore the threat. From one point of view it would be better if they had no previous knowledge or experience of the warning signs because then the very novelty of the stimuli would tend to arouse vigilance and apprehension. Air raids sirens had this effect on civilians in Great Britain at the beginning of the war. However, the risk is that many people would not know what a novel warning signal means, and furthermore, its novelty can only be retained by not having any practice drills. The dilemma is further complicated by the fact that if a warning message is used repeatedly in practice drills, it will come to mean "This is a practice drill", and not "This is a *real* warning". Not only are people typically much less responsive to practice drills, but they are often resentful of them. Indeed, people have been annoyed and resentful of bona fide false alarms when the disaster struck elsewhere or proved to be a minor one. Such negative reactions to warning signals are, of course, a function of the inconvenience and annoyance that protective action entails: the drill or false alarm often involves considerable cost and unpleasantness in terms of inconvenience, loss of time, work and money, and the arousal of apprehension.

Nevertheless, a warning which proves false fo a given community may still be positively reinforced. For example, some 10,000 residents of Panama City in Florida responded with evacuation to the warning that Hurricane Florence was approaching their city, only to find that the hurricane suddenly changed its course and struck the coast about 100 miles away. However, although subjected to considerable inconvenience in evacuating the town, most of the people did not complain about the false alarm but said that they would evacuate under similar circumstances in the future. This positive attitude was apparently induced by their perception of the consequences: they observed the very high tides, experienced some of the high winds, and had frightening descriptions and pictures of what happened only 100 miles away. Thus their response to the warning was effectively reinforced by concrete and vivid information about the consequences (Killian, 1954).

An important factor which reinforces the meaning of a warning message is the receiver's belief in the likelihood of the event in question. Studies of the false air raid alerts in Chicago, Washington, D.C., and Oakland, California, revealed that those people who believed that war was imminent, that the international situation was tense, or that a war might be set off by mistake, were much more likely to interpret the sirens as signalling a real alert. In a similar manner, warning signals tend to become significant and meaningful when there is a general build-up of apprehension and fear. Hurricane Carla created this atmosphere over the two or three days that it was approaching the coast of Texas and the threatened population apparently responded very well to the sequence of warning messages. The Russian-American crisis over Cuba in 1952 had a like effect on officials and most citizens in the United States. It is not known what the response of Canadians was, whether the threat stimulated people to investigate warning signals and protective action or conditioned them to be even more indifferent. Of course, appreciation of such a crisis depends largely on the manner in which national and other leaders and the communication media take it seriously and convey this to the population.

All of the evidence is that warning signals will be automatically interpreted as "acute danger" if they have in the past been followed all but invariably by a validating event. Indeed, this is so for any stimulus that tends to evoke a response automatically. For example, when the telephone rings, we nearly always reach for the receiver and say "Hello", because the ring has been regularly validated or reinforced by someone answering our "Hello". However, if the ring and our answering is repeatedly followed by no validating event—if no one answers our "Hello", its interpretation as a signal for action will be extinguished. This is one of the major problems with the holding of practice air raid alerts: they are *not* followed by air raids, and hence this meaning tends to be extinguished in the minds of the people. Fortunately, however, there are other ways of maintaining the warning value of air raid alerts. If practice alerts are held

invariably at the same hour and *on the same day of the week,* this becomes the expectancy in the minds of the population. Then the occurence of an alert at a different time and on a different day is much more likely to alert people to the possibility of a real alarm rather than a test, practice drill or mistake. This principle was confirmed in the Chicago false air raid alert: only four per cent of the respondents defined the siren as a test, practice drill, or mistake and a large proportion expressed feelings of apprehension and fear, presumably because the siren sounded at night whereas they were used to hearing it at 10.30 a.m. every Tuesday. On the other hand, if practice alerts are sounded at different times of the day and on different days of the week, this develops the expectancy that a practice alert might occur at any time. This was the practice in Oakland, California, and when a false alert occurred, more than 50 per cent of the people thought it was a test, practice drill or mistake.

Organizational Encouragement. Mack and Baker (1961) emphasize the power of an organization to determine human behaviour, *regardless of peoples attitudes* toward the signal they receive.

> ... Attitudes are separable from behaviour. An organization can inhibit a man's discriminatory behaviour even if he holds prejudiced attitudes. When the United States Navy desegregated recruit companies, white apprentice seamen shared bunk, mess, and shower facilities with Negroes whether or not they were prejudiced. Why? They received, interpreted, and acted upon the organization's signal to behave in a non-discriminatory manner because the organization had power over them. They had become accustomed to the fact that the organization could impose sanctions, that it would reward those who responded to directives and punish those who did not. They had become conditioned to conforming when a directive announced that "All personnel will now..." do the following, whether it was fall out for rifle drill or form companies into racially integrated units.[4]

If an organization is present to encourage this action or that in its members, and if the organization is oriented toward emergency measures or civil defence, then we could expect a higher proportion of the members to take protective action in response to a warning signal. This principle receives support from the findings on the false air raid alerts in Washington and Chicago. In Washington many workers were in government offices where the correct response had been made known, or if they did not know what to do there was a good chance that others would, especially supervisors or colleagues with civil defence training, and most office walls had placards with the relevant information. Probably encouraged by this organizational environment, 20 per cent of the respondents took protective action—although only 7 per cent thought the sirens indicated a real air raid alert. This contrasts with Chicago, where most people were not in their organizational environment but with their families at the time of the alert: although 43 per cent thought the sirens indicated a real air raid alert, only 2 per cent took protective action.

Credibility of the Warning Source. The extent to which a warning will be taken seriously is strongly influenced by the credibility of the source or official from which the warning is issued. Does he have the position and status which evoke respect? Do people believe that he has reliable and valid sources of information? And does he have a history of reliable and good judgment?

It has been found that even a mild fear message can produce a strong response if it comes from a credible source (Miller and Hewgill, 1964). On the other hand, a strong fear message has very little effect if it comes from a low credibility source or individual. It is probably the factor of credibility that makes people turn to friends and to selected officials when they are apprehensive. A friend, a policeman, or a physician are credible sources of reassurance and direction within their respectives areas of recognized competence. It is essential that official warning agencies be not only known by the population but that they have developed high credibility by demonstrating a high proportion of "hits", reliability, and frankness in setting

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[4] Raymond W. Mack & George W. Baker, *The Occasion Instant — The Structure of Social Responses to Unanticipated Air Raid Warnings,* Disaster Study No. 15, (Washington, D.C.: NAS—NRC, page 40).

forth the unpleasant with the pleasant. The B.B.C. established such an image of credibility in Great Britain, and indeed throughout Europe, during World War II.

There is some evidence in the literature (Moore et al, 1963) that elected officials are sometimes reluctant to take warnings seriously and to take the responsibility of authorizing drastic measures. In some instances they have waited till people had taken the initiative and were evacuating on their own, before issuing the order to evacuate. The issues of leadership roles, purposes, and judgment which such cases raise will not be analysed here. However, it must be emphasized that, in so far as any warning system or emergency organization must deal with people who are already integrated within a social system and keyed to selected sources of information, it would be well to examine the credibility of relevant officials and agencies within communities and the nation with a view to developing and utilizing this important quality.

Strength of the Fear Message. It was believed for some time that a message with strong fear content was not the most suitable to change attitudes and get action from people. For one thing, it was thought that a strong fear message would arouse too much emotion and detract from the development of appropriate coping behaviour. More recent studies indicate that the effects of the amount of fear in a message are also a function of other factors. Miller and Hewgill (1964) compared messages with strong and mild fear content about the advisability of building underground schools which would be a protection in nuclear war and and natural disasters. Their experimental subjects were members of Parent-Teacher Associations. They found that the message with the strongest fear content, if it came from a highly credible source, was most effective in changing subjects' attitudes. While a message with mild fear content from a highly credible source was not far behind, this study indicates that a strong fear message can be very effective.

Although not investigated in the above study, it is likely that the effects of strength of fear are also related to how much time is available for action and to what kind of action is indicated. For instance, if time is short and the kind of action called for is relatively complex, it is likely that a strong fear message would arouse so much anxiety that execution of the behaviour would be less than efficient. Another factor that interacts with strength of fear content in a message is the current anxiety level of the receivers. Janis and Feshback (1954) found that subjects who are already anxious respond better to mild fear messages than they do to strong fear messages, while low anxious subjects respond better to strong fear messages. Presumably this differential effect is a function of both the individual's chronic or long standing level of anxiety together with his level of anxiety as aroused in a particular situation. This means that in order to build the appropriate level of fear content into a message it would be necessary to know the level of chronic anxiety in a given population as well as their current level as produced by present circumstance.

Members of the population who exhibit indifference, apathy, and feelings of invulnerability may present special problems. If their attitude is essentially one of indifference rather than of being defensive, presumably strong fear messages would be indicated. However, if their indifference is defensive, this may be a front for a highly sensitized person, in which case a strong fear message may produce disorganization.

The level of fear which is aroused by an early warning message has influence in determining how subsequent messages are interpreted. If the initial message did not arouse apprehension and vigilance, subsequent messages that are at all ambiguous and may be interpreted in various ways will tend to be ignored or taken as reassurance. On the other hand, if the initial message aroused strong fear, subsequent ambiguous messages will be interpreted as confirming that fear. This was illustrated in Cantril's (1940) study of people's reactions to the radio program which purported to present an "Invasion from Mars". Those who thought the invasion was real interpreted the flow of traffic outside as unusually heavy and a sign that people were flying from the city. On the other hand, those who took the "invasion" as fiction interpreted the traffic as normal and reassuring. Thus there is a tendency for people to look for and "see" information which confirms their current attitudes and feelings. The implication of this is that people who are highly aroused will be more subject to the influence of rumours and other misinformation, and that those who are not aroused by early warning signs will require powerful fear messages to produce the appropriate arousal and vigilance.

Degree of Personal Involvement. An important factor in sensitizing people to the content and significance of warning signs or messages is their degree of personal involvement in the sense that they have a family member or close friend or relative in the danger area. This factor was first brought to light in the investigation of the Springhill mine disaster (Beach and Lucas, 1960). Most of the wives whose husbands were in the deep underground mine at the time of the "bump" immediately interpreted the quaking of the house as a bump in the mine. On the other hand, those whose husbands were not in the mine at the time tended to interpret the event as some external occurence like a car crash.

In the studies of the false air raid alerts reviewed by Mack and Baker (1961) it was found that persons whose families were in the potential danger zone, were more likely to interpret the sirens as a real alert. This was the case whether they were with or separated from their families. Moreover, those who were with their families reported a much higher incidence of fear, excitement and apprehension. However, the latter group was notable for its failure to take protective action—they exhibited a disconcerting gap between their feelings and attitudes on the one hand and their behaviour on the other. Perhaps having the family together in the home was felt to be some kind of protective behaviour. Nevertheless, this kind of gap between attitude and behaviour should be investigated further.

The following social categories also showed a greater tendency to take the false alerts seriously: women, people with high school education as opposed to public school or university education, residents of large cities more than small-town or urban residents, older people, and members of "middle status" churches. People who were with their peers (neighbours and friends) were least likely to interpret the sirens as a real warning. Presumably they sought validating information from one another, but tended to play down the potential threat because they were concerned not to appear afraid in the eyes of their peers.

Availability of Protective Measures. The effectiveness of a warning message will also depend on the individual's evaluation of the situation in terms of what protective measures are available, his estimate of the loss if he does not take protective measures, how effective he believes the protective measures to be, and the feasibility of the protective measures in terms of time and means. In natural disasters like tornadoes and fires, the individual may frequently be unable to do much to protect property, but he can nearly always greatly reduce the chances of injury and death to himself and his family members. However, most people seem all too unaware of this—even with respect to protective measures against car accidents. The problem is generally that of lack of personally involving experience in terms of both the unpleasant consequences and the effectiveness of protective measures. These can hardly be provided at will. However designed educational programmes may be an effective substitute; they should make use of credible and authoritative informants, personal accounts of first-hand experiences, audio-visual aids, and utilize small groups to enable members to become involved in evaluating and absorbing the information.

The problem of protective measures is a particularly important one in the case of nuclear emergencies. If people believe that they are likely to die whether they take protective measures or not, not only will recruitment, preparation, and training be extremely difficult, but warning messages will have no effect except to announce that "This is the end". Some of the people in Chicago who thought the sirens indicated a real alert but did not take protective action explained that they did not know what they could do, or thought it was futile anyway. If this attitude is prevalent in Canada—this has not been determined—special measures would be required to counter it. Detailed and concrete information on the various effects of nuclear explosions would have to be provided for the public. The manner in which this is done will make the difference between apathy and constructive cooperation. For one thing, the presentation of information should emphasize the positive and hopeful aspects rather than negative features. For instances, if the estimate is that 100,000 would die in a city like Toronto, this prediction should be put in a different form: that a man's chances of survival are nine out of ten. Second, the information should be conveyed by individuals with high credibility. Third, more positive and constructive attitudes are likely to result if the information is provided in small group discussions where it can be adequately worked through. Fourth, the information should always be accompanied by specific instructions on what can be done. If rehearsal and training in

protective action is also provided, the trainees usually feel much more positive about the problem and their attitude will affect their associates and the public.

Cost of Protective Measures. This factor logically belongs with the previous one, but warrants special emphasis. In natural disasters people often fail to take protective measures on receipt of a warning because, together with an underestimate of the probable consequence of the disaster, they are deterred by thoughts of lost time, money, and work. Some are loath to leave their home and business properties, while others are unwilling to leave family members, friends and others who cannot be moved or must stay for special reasons. In this respect, man is not unlike the birds: he does not like to leave his home habitat. Fortunately, the influence of this factor in determining response to warning can usually be countered by information about estimated consequences if no protective action is taken, and the effectiveness of the protective action.

Cost factors are more important from a practical point of view when it comes to false alerts and practice drills. In the former case, the individual suffers cost *because* he has taken protective action. If the warning sign is not to lose its significance and "call to action" value, special means must be adopted to compensate for the cost, inconvenience, and possible laughter of others, and to reinforce what was appropriate behaviour. This can best be accomplished by the appropriate recognition and rewards which leaders, employers, and other significant people in the social system can provide. Cost for participation in practice drills must be balanced in a similar manner by special reinforcements from the social system.

Confirming Warning Messages. It has been observed repeatedly that people seldom react with protective behaviour to a single warning message. Rather, they typically seek confirmation of the warning. As Williams (1964) has indicated, when people get a message which says "This is it!" they seem to require a second message which emphasizes the point by saying, "Yes, this *really* is it!" In the studies of false alerts in the United States it was found that about three-quarters of the people who heard the sirens sought further information, to confirm or negate the warning—from friends, neighbours, officials, high status people, and T.V. and radio. Apparently the reason so few people in Chicago took protective action—though many thought that is was a real alert—was partly because they received no confirming warning. The tendency to seek confirmation is also characteristic of personnel at relay points in the warning system. It would be important to minimize and regulate this tendency to confirm warnings, at least among the personnel of the warning system. On the other hand, there should still be provision for confirmatory messages, and these should be planned in conjunction with a feed-back system which reports how messages are received.

Preparation and Training. Previous instruction and training are important determinants of response to warning. In false air raid warnings in the United States it has been found that about 55 per cent of those with civil defence training have taken some sort of protective action, while only between three and ten per cent of others have done so. The response of those who have had a personal experience of disaster can be further improved by training, especially in terms of acquiring a variety of protective behaviours. Training has the disadvantage that people may become adapted to the warnings signals and in some countries, for instance, Great Britain, the sirens are not used. However, appropriate social reinforcement of response to the warnings will help to counter the adaptation tendency. Moreover, with better prediction facilities for both natural disasters and nuclear war, there is likely to be a period of crisis build-up, with apprehension and vigilance, which will usually sensitize people to the crucial warnings signals.

For the population at large, training should be focused on signal recognition and practical knowledge of protective behaviours. All of the factors cited above as determinants of response to warnings should be considered in the development of training programs, especially organizational encouragement and social reinforced of appropriate behaviours. Members of the warning system will probably require even more training and rehearsal, in every step of the warning process, with as much emphasis on human factors as on technical know-how. Elected leaders and other such officials must have adequate briefing and training—or the whole system may be ineffective.

Mack and Baker (1961 concluded on the basis of studies of false alerts in the United States that the apparent ineffectiveness of civil defence measures could not be attributed wholly to public apathy. Rather, there was inadequate use of existing research findings in the design and implementation of emergency measures, and insufficient use of the research process in dealing with problems of motivating and informing the public, establishing public confidence, and so on.

Evacuation

Evacuation refers to the removal of people from their living area for temporary periods, because of real or potential danger. Evacuation is to be distinguished from migration, which involves relocation on a permanent basis. Three main kinds of evacuation be called for in disaster:

(1) **Tactical evacuation** is the temporary or short-range removal of most people, except possibly for maintenance personnel, from the potential danger area. This assumes a sufficiently long warning period to permit the move. Successful evacuations of this kind have been carried out in the face of threat from floods and hurricanes. This is the kind of evacuation that might occur if there was certain threat of a nuclear strike on a particular community, and if there was sufficient advance warning. A tactical evacuation may also be carried out following the impact of a disaster if the area is a continuing source of danger because of epidemics, radioactive contamination, or simply because it would be much more feasible to support and care for the survivors elsewhere for a time.

(2) **Partial strategic evacuation** involves the removal of those not essential to maintain the community, women, children, the aged and infirm from the actual or potential target area for an extended period. This kind of evacuation was carried out from a number of cities in Great Britain, Germany and Japan during World War II, some on a voluntary and some on an official basis. Partial strategic evacuation may also be carried out because of the difficulty of supporting and sheltering all of the population in the devastated area. This was a consideration in London during World War II where 1,150,000 homes were destroyed or damaged in the nine months from the beginning of the blitz.

(3) **Complete strategic evacuation** involves the removal of all but maintenance personnel from an area for an extended period of time. This kind of evacuation has been rare in the past, but it might be indicated in the event of nuclear war.

In a society in which millions of people are concentrated in large cities, and when those cities might well be targets in any nuclear war, the problem of evacuation assumes formidable proportions. If there is a warning period of only minutes, there would be no time for evacuation and the problem does not arise. However, in the more likely case that there is a fairly obvious build-up of international tension, certain areas may be evacuated on order. Indeed, whether there is an official policy and move to evacuate people, there may well be unofficial voluntary evacuation and this should be anticipated in planning and preparing for such an emergency. The technical problems of transportation, shelter and feeding in a large scale evacuation will not be discussed here except insofar as they affect the human problems. Research on evacuation (Ikle and

Kincaid, 1956; McLonahan and Hostettez, 1965; Titmus, 1950) has pointed up certain problems and lessons dealt with below which should be considered in planning for evacuation.

Administration. Whether an evacuation is to be carried out on short notice or in phases over a longer period of time, there must be detailed planning and rehearsal of informing and instructing the population, collection, movement, staging, reception by hosts, and maintenance in the reception areas. Officials in Great Britain developed efficient procedures for the movement of large numbers of people when they evacuated three and one-half million in the three months prior to World War II. Then, in the three days just before the War over 1,400,000, mostly women and children, were moved from crowded cities without a single accident or casualty. In London, the evacuees were assembled at 1600 collection points and guided by an army of voluntary helpers, many of them teachers. A notable feature of the operation was that extensive use was made of identifying banners, labels, armlets, and other markers. Although movement out of the city to staging and reception areas was remarkably successful, planning and preparation was lax beyond that point and the operation nearly broke down—to the point where open revolt almost occurred in some reception areas. Some evacuees were dirty, had scabies, came in rags, and were worn out with fatigue and uncertainty. The potential hosts did not welcome, but often rejected such people. Supplies of clothing and other material and facilities, such as those for expectant mothers, were inadequate. And evacuees and hosts alike were unprepared for the many other problems they had to face. In the end, 900,000 of those officially evacuated returned to their homes in London by January 1940. Largely as a result of this negative experience, a massive compaign to carry out another evacuation in the spring of 1940 met with little response: less than 20 per cent in target areas registered for evacuation and only one in 50 householders in reception areas was willing to offer his home and help. The British experience demonstrates the necessity for detailed planning and administration for all phases of an evacuation from its inception until evacuees have been returned to their homes. Evacuees and hosts should be thoroughly informed and instructed, there must be an adequate network of administrative and welfare personnel at every level and stage of the operation, and specific problems like those listed below should be considered in planning and administering the operation. There should be adequate provision for traffic control, for registration of evacuees, and for the official and informed communication needs of all people involved.

Motivation. Potential evacuees must be motivated to move and to follow instructions, and potential hosts must be motivated to receive evacuees. Many people in potential target areas will be motivated to leave if an obvious build-up of threat. Official and unofficial Great Britain expected most cities to be devastated by bombing at the beginning of World War II, and this was a big factor in motivating people to evacuate at the beginning of the war. Other people will be stimulated to move when the danger becomes imminent—over two million silently and voluntarily left London during the blitz in 1940. However, many people will not be inclined to move either because of feelings of invulnerability or because of a strong tendency to stay at home in familiar surroundings. Others may need to be reassured that the government and officials intend and have the capacity to care for them. Local civic officials, teachers, clergyman, and others may be most useful in persuading people to respond. Evacuees should be given precise instructions about what to take, where to assemble, how to identify and mark themselves, and the sanctions which they will suffer if they do not conform. Potential hosts should be informed, instructed and motivated in a similar manner. They should also be promised and given tangible compensation. Finally, it is necessary to provide means for maintaining the motivation of evacuees and hosts by providing adequate supplies on the one hand and sympathetic counsel on the other so that differences and problems may be resolved.

Accomodation. Three kinds of accomodation may be used for evacuees: camps or bivouacs, public facilities like hotels, and private homes. —Fallout shelters would be a fourth category for tactical evacuation in case of a nuclear strike. The first two types of accommodation would generally not be adequate for most long-range purpose. In past disasters and wars private homes have proved to be the main and preferred source of shelter for evacuees. However, it would be well to plan for improvised accomodation especially for a nuclear emergency. Because space is usually limited in such situations, it may be important to assist host and evacuee in using the space most efficiently.

Allocation and Reception. The destination and reception of evacuees should be worked out in advance if at all possible. This was not done in some instances in Great Britain and the result was often unhappy. In some areas the evacuees were walked or paraded around while various local householders took their pick of those whom they would shelter. Mothers were not generally in demand. Those who were dirty and in rags were often bypassed, and scenes reminiscent of a cross between a slave market and a bargain basement were described—farmers picked strong looking lads, the nicely dressed were chosen first, and so on. The question whether hosts or evacuees should be allowed to chose one another has not been resolved. There is some evidence that voluntary selection makes people happier initially, but that problems may become exaggerated because of disappointed expectations with respect to one another. If possible in terms of time and adequate welfare and administrative personnel, allocation of evacuees on the basis of social and personal characteristics would probably work out as well or better in the long run. In any case, family groups should be kept together. When families were evacuated from cities in Germany during World War II, while their husbands stayed behind to work, there was much dissatisfaction and productivity decreased. The authorities resolved this problem by locating families on the fringe of the city or nearby so that husbands could visit them at least occasionally.

Provision of Service Personnel. A major problem in caring for large numbers of evacuees for more than a few days is the difficulty of providing adequate numbers of the appropriate service personnel. The latter include medical and paramedical personnel, clergymen, welfare workers, teachers, and technical personnel. This was not handled satisfactorily in Great Britain during World War II. Hundreds of thousands of children were without education, health services, and school meals and milk for more than 4 months, and over 100,000 were still not receiving any educational instruction after 8 months. Such as omission could lead to serious health and social problems.

Children. Of all evacuees, children probably suffer most and create most problems. Bedwetting and soiling increased markedly among evacuated children in Great Britain. In some reception areas it seemed that in the mornings every window was filled with bedding, hung out to dry and air in the sunshine—"the scene is cheerful, but the householders are depressed". Many householders did not know how to handle such problems and used punishment and strict dicipline rather than understanding and the provision of attention and security. These difficulties were particularly frequent when children were separated from their parents. Moreover, with no educational facilities in many cases, the children were not provided with sufficient routine activities and supervision.

Personal Differences. Various personal characteristics such as social status, education, religion, moral customs, manners, and habits can make for conflict and more serious problems between host and evacuee. Upper and middle class families in Great Britain were reluctant to take evacuees of any class and often sought exemption on medical grounds. We may err in thinking that this would not occur in Canada—the attitude of many Canadians toward the privacy of their home and personal property might incline them to act in the same manner. Differences in social status and education can make for problems in communication, understanding, and cooperation. Most people are inclined to be intolerant of different religious views and practice. Differences in moral customs, and other manners and habits may lead to discrimination, conflict and unhappiness. For instance one Glasgow mother was reported to have spoken sharply to her 6 year-old child, "you dirty thing, messing the lady's carpet, go and do it in the corner". In another instance, when the householder went to see two children in the nice clean bed she had provided for them, she found them huddled in the corner of the room. One of them said "We are not goin' there, that's a bed for the deid folk". Another child said "The country is a funny place, they never tell you you can't have no more to eat". And one child told his mother "they call this Spring, Mum, and they have one down here every year". While Great Britain may have had an unusual number of evacuees who were different, poor, and ill informed, it would be a mistake to assume that all Canadians are alike in terms of experience, wordly goods, habits, and other personal qualities—approximately one-quarter of our population, urban and rural, is seriously underpriviledged in terms of economic and living conditions. In planning for evacuation, it would be important to consider personal characteristics in matching hosts and evacuees and to provide service personnel and facilities which would help to minimize difficulties.

Provision for Constructive Activity. There has been little mention in the literature about the importance of providing activity outlets for evacuees. However, this would be important, especially if evacuation was for an extended period of time. Not only should children be provided with educational facilities and instruction, but both children and adults should be actively involved in work and play that will contribute to the development of community spirit on the one hand and contribute to the process of reconstruction of society on the other.

Suggested Readings

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CHAPTER 6

ENTRAPMENT AND SHELTER LIVING

Summary

People who are trapped or confined to fallout shelters for some time are subject to special stresses and problems. Sources of anxiety and fear include the threat of abandonment and death, uncertainty about the future, anxiety about family members, fear of emotional breakdown, and fear of things like lack of oxygen and running short of food and water. Human needs which may be denied to some degree in confinement include needs for physical elements, for security, for social interaction, information, self-esteem, and variety of experience. If these are not met, a person may react with aggression, depression, regression, avoidance, denial, superiority behaviour, or bodily symptoms. Living in a fallout shelter would involve special problems of lack of space, crowding, lack of conveniences and comforts, interpersonal problems, supervision, and environmental conditions. Principles for the management of human behaviour in such circumstances include realistic appreciation of the individual as a person, leadership, modification of stressful conditions, provision for information and communication, purposeful activity, religious assurance, use of physical restraint, provision for controlled expression of emotions, role playing techniques, and preparation for emergence from the shelter. Preventive measures include adequate leadership, organization, provision for information and communication, care of physical needs, use of group decisions, use of occupants' personal resources, maintaining natural groupings, mealtime routines, provision for personal hygiene and exercise, and a programme of preparation for post-shelter living.

Waiting for Rescue

Special problems are created when a group of people are confined together for some period, whether in prison camps, in submarines, when trapped in a mine, or confined to a fallout shelter. Living conditions in such circumstances produce a multitude of stresses which have an effect on physical health, on emotional reactions, and on coping behaviour. Limitations of space produce restriction of movement, crowding, loss of privacy, as well as inconvenience and discomfort as far as sleeping and sitting are concerned. Physical factors like limited supplies of food and water, and deviations in temperature and humidity level, together with the presence of such intrusions as noise and odors, add to the difficulties. In addition, separation from loved ones and from the outside world, together with the uncertainties of the future, produce fear and anxiety, grief a and apathy, and irritability. Knowledge of the manner in which such conditions and stresses affect behaviour will enable us to know what to expect and provide a basis for preventive and remedial action in the event we are faced with such circumstances.

There are three main sources of stress when human beings are confined or trapped in crowded conditions for a time: (1) factors which produce fear and anxiety. (2) deprivation or being without necessities and conveniences that one is used to, and (3) frustration or being denied what one was expecting, due to the intervention of some person, thing, or event.

Sources of Fear and Anxiety

One of the main sources of fear and anxiety for people who are trapped in some situation like an underground mine is the threat to their personal survival. Will they get out or be rescued? Or will they run out of supplies and become progressively weaker, lose consciousness and die? This is to be faced rather directly with the threat of death, a very disturbing experience for most people. It may not be quite so upsetting in the case of persons who have become ill and gradually got worse over a period of time, because the possibility of death presumably comes upon them more slowly and also because everything possible is typically being done to help them. However, when the threat of death occurs suddenly and unexpectedly, to people who are healthy and had only an expectation of life, and in circumstances where little can be done by them or others to avert the possibility, the prospect may be catastrophic. Apparently the threat of death is particularly upsetting among people in our culture because we have a strong tendency to live, not for today, but for the future. Our future-oriented value system makes the thought of death less acceptable than it is to the more present-oriented attitudes of, for instance the Islamic peoples. Nevertheless, studies of men who have been rescued after entrapment in underground mines indicate that, when confronted with such a direct threat and in circumstances where they can do little about it, the threat of death is not nearly so disturbing as it appears to the outsider. In the Springhill disaster, non-trapped miners expressed more horror about the situation of the trapped miners than the latter did.

Another common source of fear among people who are waiting to be rescued is the thought that they may be abandoned. The trapped miners in the Springhill disaster had no way of knowing whether they were thought to be alive, whether the mine was so dangerous that it had been sealed, or whether rescue work would continue until they were found, dead or alive. This was a frightening thought, and the men were torn between the faith and hope that their fellow miners would finally reach them and the fatalistic thought that they would be abandoned. Man does not give up hope easily, but when hope is overwhelmed by the nature of the circumstances, despair may take over.

It has been emphasized repeatedly that when a man is faced with the dangers of an emergency his thoughts typically turn from personal survival to concern for his family. Much the same thing happens when

men are trapped in a mine. Although they are helpless to do anything about it at the time, they experience much anxious concern for the welfare and future of their families. The trapped miners in Springhill spent a considerable part of their time talking about their families, wondering how they were, hoping they would be well, and wishing that they had done better by them.

Another fear which some people suffer under conditions of enforced confinement is that they may lose control of their feelings and break down. Powerful emotions of anxiety, despair, guilt and occasionally self-pity press for expression. On the other hand, the individual may feel that if he lets go at all he will be unable to stop. Even in such circumstances, however, self-control and self-respect are strong and enduring characteristics of most men. The trapped miner in Springhill generally handled this problem by retiring to a corner of his hole and having a little cry by himself. This often happened when one other person was with him and this person usually rose to the occasion by offering his comfort and support.

Men who have been trapped alive have usually experienced a number of other more specific threats like fear of gasses, of lack of oxygen, of running out of supplies, and fear that others might lose control and go beserk. They are relatively helpless in the face of the threat of lack of oxygen, and they are uncertain of what to do and lack confidence in their ability to cope with deviant behaviour on the part of others.

Confinement in a fallout shelter following a nuclear explosion would add to the weight of these fears and produce other threats. While there may be no immediate threat of death, this will loom large as a future possibility because of radioactive contamination and because of the thought that the outside world may not support life. Uncertainty and fear of what the future holds will be special sources of apprehension. The threat of being abandoned may also come to the fore, especially if there has been an extensive nuclear strike and widespread destruction and death. A group of people in a shelter may find themselves isolated from other living beings, with no communication and no way of knowing if other groups of emergency and rescue units have survived or are in the area. If a nuclear explosion occurred while families were separated, with the father at work and the children in school, separation anxieties will be particularly intense and widespread. Claustrophobia or dread of enclosed places may bother a few people. Others may find that the physical intimacy produced by crowded conditions makes them apprehensive and anxious.

It is quite clear that apprehension, anxiety and fear would be a major problem in shelter living following a nuclear strike. Indeed, it is difficult to estimate the effects of these because studies of confinement have not been "real" in the sense that the individual's survival and future and that of his family have been really threatened in experimental situations. Nevertheless, we do know how fear affects a person, making him jumpy and irritable, apathetic and espairing, and making it difficult to concentrate and display coping and cooperative behaviour; and we can predict that these problems would be exaggerated in people who are confined to a shelter following a nuclear explosion. We also know what means will help to reduce and control anxiety and fear in such circumstances, like adequate communications and other preventive and remedial measures which will be discussed later in this chapter.

Basic Human Needs

A convenient way to discuss the deprivations and frustrations which may arise in shelter living is to think of them in terms of the human needs which are involved. The term frustration refers to that situation in which a person is prevented from satisfying a need when he fully expects to do so, or to the mixture of feelings and reactions which are produced by such a situation. Frustration should be distinguished from deprivation, the latter referring to being without or having to do without things like food, information, conveniences, and comforts. The difference between the two concepts is that no particular hope or expectation is involved in the case of deprivation while these are active in the case of frustration.

As might be predicted, frustration typically leads to much more vigourous reactions on the part of the individual because he not only has to do without but he also suffers disappointment. The distinction between frustration and deprivation is rather important for shelter living, because deprivation will be more important as a source of stress. In general, people will hardly have definite expectations of satisfying their various goals and desires. Because doing without things will be more a matter of deprivation than of frustration, we can expect less disturbing reactions than might have been expected.

As a complex living system, man must have some minimum of various inputs and outputs if he is to function adequately. The necessary inputs and outputs are based on given physiological needs for things like food, water oxygen, and for the elimination of waste products; and on acquired psychological needs for security, social interaction, information, and so on. If a person is deprived of normal and expected inputs, or if he is deprived of the opportunity to produce certain outputs, the equilibrium of his system is disturbed with resulting deviations in functioning and behaviour. For purposes of convenience, man's needs will be grouped in six general catagories:

1. **Physical Needs.** In order to function well, and even survive, the body requires a certain range of inputs of oxygen, water, food, temperature, humidity, exercise, rest and sleep.

2. **Security Needs.** To be relatively free from disabling anxiety and fear, people need to feel that they are or can be protected from all sorts of uncertainties and danger. On the one hand they need to feel confidence in their own coping ability and on the other they need some assurance that they can depend on other individuals and groups in their social system for support, help, and protection when these are called for. The need for water when we are without that liquid; and we become uncertain and anxious and look for reassurance when our own coping abilities and the protective supports of society are threatened or in question. One of the most important ways in which the security need is met is by the presence of a well integrated group around the individual. The child may feel completely secure in the midst of danger if it is with the primary family group—providing the family members are not themselves upset.

3. **Social Needs.** Man is essentially a social being; it is difficult for him to live in isolation from other people. Not only are many of his physical needs met by other people in our society, but he typically develops a psychological need for interaction with others. Furthermore, he has a need to feel accepted by other people, to feel that he is a member of some group that he can identify with, and to feel that he can give and receive friendship and love. On the other hand, nearly all of us can get too much of even the best things, and social interaction is no exception. That is, the individual also has a need for some reduced input of social stimulation; he needs privacy, quiet, and even darkness by times.

4. **Information Needs.** The need to receive informative and meaningful communications and to have the opportunity to share information is an aspect of man's social needs. However, it assumes such importance in our modern society and especially in emergency situations that it warrants separate treatment. In the most general sense, information is made up of all the inputs which reach us in the form of stimuli or cues through our five senses. However, we shall be more concerned with information as it is conventionally understood, that is, as meaningful and largely verbal signals and communications which we deal with on a conscious level. In an emergency situation man's feed for information is not a need for any kind of information but for communications that clarify and reassure on the one hand, or that alert and give appropriate warning without undue threat on the other hand.

5. **The Need for Self-Esteem.** The individual has a need to think that he counts for something, that he is appreciated and has some worth, that he has some unique qualities and special abilities. A man virtually ceases to be a man when he is so humbled that he has lost every semblance of self-esteem. When a man feels that he counts for nothing, he may lose the will to live. There is evidence that belief in physical survival is not enough to maintain the will to live—this is illustrated by suicide attempts in severe depressions and by the fact that American Prisoners of war in Korea frequently died when they lost the will to live. They were so humbled and alienated from their fellows, and their self-esteem so undercut and devalued that they lost hope of surviving as the persons they believed themselves to be.

6. **The Need for Variety of Experience and Stimulation.** Recent studies have shown that without some variety of stimulation a person not only gets bored but suffers a loss in the ability to concentrate and to carry out skilled tasks, and may even experience physical symptoms and psychological disturbances like hallucinations. The need for variety may be in part a physical need of the organism, but it is clear that it is also acquired. The individual who has been raised on rice and only experienced limited kinds of stimulation has a small need for variety as compared to the individual who is used to a great variety of foods and other kinds of experiences. In one study in which six young men lived for seven days in an 8 x 8 foot shelter, with only emergency crackers to eat, the subjects developed an intense and chronic preoccupation with food, a nauseous dislike for crackers, and a tendency to fast rather than to eat them.

Reactions to Deprivation

Although there are a variety of individual reactions to deprivation, most of them can be classified under one or another of a few main categories, including: aggression, depression, regression, avoidance, denial, superiority, and bodily symptoms.

Aggression. Some form of aggression is often exhibited in response to either deprivation or frustration. Fortunately, this does not often take the form of fighting and killing in human beings, as it typically does in animals. In our society, the socialization process has made these extreme forms of aggression relatively infrequent. Nevertheless, the possibility of their occurence should not be ruled out. When they do occur, they are usually directed against members of some group which is the object of prejudice and scapegoating. For example, the incidence of lynchings in the southern United States some years ago was correlated with the occurrence of poor crops—presumably aggression was instigated by deprivation and frustation and directed against the low-status Negro group. However, aggression is more often expressed as irritability, verbal anger, laughing at and devaluating others and their behaviour, disgust, and negativism or refusal to respond and cooperate. While not openly dangerous in themselves, these kinds of behaviour could create serious problems when people are living in enforced and crowded confinement.

Depression. Depression is another common reaction to deprivation. The individual experiences despair, loses hope, and may give up. Feelings of helplessness are common, and the person may feel that something in his own past is responsible for the tragedy and so indulge in self-blame. His movement and talk are usually slow, but occassionally he may become excited and agitated. He is nearly always apathetic and has little will to help himself or to live. An attempt at suicide is a possibility in this kind of reaction. Fortunately, however, when this condition is a function of circumstances it responds quite well to physical care, sympathetic leadership, and counselling.

Regression. When the various stimuli, rewards and reinforcements, and other conditions which maintain an individual's "normal" behaviour are missing to some extent, he may regress or adopt old habits and ways of behaving in order to get the attention and other things which he desires. What behaviours will be displayed depends on each individual's personal history. However, regression is usually characterized by childishness, pouting, unreasonableness, temper and impulsivenes, and a general lack of self-control appropriate to his age level. Children who were evacuated from British cities during World War II and separated from their families were deprived of some of their basic psychological needs; they frequently showed regression in the form of bed-wetting. A common form of regression in adults is helpless behaviour and the tendency to demand constant attention and consideration.

Avoidance. The avoidance response to deprivation is an attempt to side-step the problem and to have as little as possible to do with it. By not getting involved in the situation, a person avoids facing the stimuli and the anxieties which they would arouse. He simply refuses to face up to the problem but instead withdraws from participation in anything associated with it. His expressed view is "What's the use anyway?" This reaction to deprivation borders on that of depression and giving up.

Denial. A few individuals may exhibit the unusual reaction of denial. This is simply to argue that the problem does not exist, it could not happen, and it did not happen. Individuals with this reaction appear unaware of the problems they deny, and show no emotional reaction to them. They may stand or sit as if alone, not responding when others address them, or they may behave relatively normally, except that they ignore and overlook certain aspects of the situation. They are often unable to help themselves. Concrete and sympathetic attention to their physical needs may help to bring them into contact with reality.

Superiority. The superiority reaction to deprivation is probably a form of the aggression response but merits special mention because of its implications. This reaction is displayed by the self-righteous person who now lets people know his mind; feeling that he knows all the answers he may make endless suggestions, start to give orders, and try to put things right. He may give the appearance of being self-posessed and superior, and the danger is that he may recruit a

following as he expresses the discontents and resentments of others. Such an individual may lead in scapegoating and attacking minority subgroups or even go so far as to move against the constituted leader.

Bodily Symptoms. It will be obvious that bodily reactions can be expected when people are deprived of sufficient food, water, and other physical necessities. Man can survive without food for approximately two weeks. For the first three or four days he will experience intense hunger and this will be expressed in the form of restlessness, irritability, and anxiety. After that, he may not experience hunger, but his emotional reactions will probably include depression and apathy. A person's reaction is somewhat different when he is rationed at a level below that necessary for maintaining his normal weight. Restlessness and irritability are the more likely reactions, and these can usually be controlled and redirected by the appropriate leadership and group structure. The general solution is to divert the person's attention and involve him in meaningful and purposive activities with others. A few individuals may experience an increase in sexual urges when somewhat deprived of food. This reaction is also a matter for social controls. Another source of stress with respect to food is lack of variety. Individuals may become so sick and tired of the sight of a single food that they will eat less than is necessary to maintain their body weight, and they become irritable, and dream and talk of food incessantly.

Insufficient water is a more serious problem. A man will usually die after four or five days if he receives no water whatsoever. Complete water deprivation may induce some persons to suck their own blood and drink their own urine. The trapped miners of the Springhill disaster were without water for the last three or four days of their confinement and most of them resorted to drinking urine. They found that they had to adapt or get used to the idea, by taking a mouthful and then spitting it out, and then by taking small quantities. Some could only drink their own urine and others could only drink that of others. This measure may have contributed to their eventual survival. Limited water supplies create another set of problems in terms of personal hygiene and washing dishes and clothes. This will bother some people more than others, but is likely to be a source of irritation and interpersonal conflict.

Room temperatures above 85 and below 40 degress F. will cause problems. Constant high temperatures produce fatigue, lethargy, poor concentration, work inefficiency, irritability and unstable moods, skin irritations, and in some cases respiratory illness. Low temperatures impair manual skill and produce tension, depression, and irritability. Humidity readings above 60 per cent produce physical discomforts and psychological reactions much like those with high temperatures, especially if they combined with high temperatures.

An adequate supply of oxygen is necessary for normal functioning. A drop in the oxygen level will impair visual acuity, and affect such things as handwriting, reaction time, recent memory, and code translation. A man's judgement may become unreliable and he typically does not realize that this is happening—possibly because lack of oxygen does not produce a unique experience of craving as does lack of food or water. With further oxygen deprivation, people become irritable, lethargic, aggressive, or may show euphoria and boisterousness. Hallucinations and delusions may also occur. A severe lack of oxygen may produce brain damage and thus impair intelligence and behaviour in a lasting manner. Carbon dioxide in large amounts may produce

rather similar psychological effects Insofar as tobacco smoke and exhaust fumes give off carbon monoxide, a deadly poison, smoking and engines should not be allowed in confined quarters.

Adequate rest and sleep are nature's cure for many physical and psychological problems. It follows that sleep deprivation will allow problems to accumulate on the one hand while producing its own reactions of listlessness, apathy, irritability, difficulty in concentrating, and work inefficiency on the other.

In addition to the physical reactions caused by deprivations of necessary physical elements like food, some individuals react to psychological stresses with physical complaints. These include weakness, trembling, weeping, and occassionally nausea and vomiting. These are usually temporary and respond to psychological first aid. A more serious but relatively uncommon physical reaction is what is called "conversion hysteria". This is a psychological reaction in which some body organ like an arm, the eyes, the ears or voice, loses its normal function. Expert professional treatment is usually indicated.

Special Problems in Shelter Living

Disasters which have resulted in a group of people being trapped and isolated for some time usually produce a number of the deprivations mentioned in the last section together with their physical and psychological effects. In the event of a nuclear war, large numbers of people will likely be crowded into fallout shelters of various kinds for periods of up to two weeks or so. A number of studies have shown that people can emerge from such an experience in good physical condition and without ill effects from a psychological point of view (Altman, 1960; Baker and Rohrer 1960). Stresses and deprivations are experienced and problems do arise, but the outcome for occupants is largely a function of the manner in which the experience has been managed.

In this section we will examine the sources of special problems that have been found in communal living in shelters. The problems are essentially the result of deprivation and limitations of activity, and characteristically give rise to the deprivation reactions notes above. The following conditions are the primary sources of problems in shelter living: (1) lack of space, (2) crowding, (3) lack of conveniences and comforts, (4) interpersonal problems, (5) supervision, and (6) special environmental conditions.

Lack of Space. With as little as an estimated fifteen square feet per person in many shelters, lack of space will be a constant source of restrictions. Freedom of movement and the opportunity to exercise will be severely limited, the individual's daily pattern of habits and activities will be precluded or at least greatly restricted. Such restrictions may lead to feelings of uneasiness, uncertainty about what one should do, and general restlessness because of the lack of satisfactions which are normally involved in one's daily routine.

Crowding. Crowding will be an ever-present source of problems in shelter living. While man has a strong need to interact and communicate with others, it is a selective need. That is, there are

times when we seek the association of others and times when we prefer to be alone. Many people will find it unpleasant and even disturbing to have to live in close proximity to other people day and night. Lack of privacy with respect to personal hygiene and sleeping will be particularly upsetting for some.

Lack of Conveniences. Most of us are used to fairly comfortable or at least familiar chairs, beds, eating arrangements, toilet facilities, and a large number of other conveniences. It is often annoying when some of these are changed, even in our own homes. Under shelter conditions the change will be more drastic and this will not be a source of cheer. For example, most people are not likely to sleep so well in a bunk, with the result that they will be tired and experience feelings of frustration and annoyance. The general lack of conveniences will tend to produce impatience, annoyance and irritations, which may be directed against other people in the shelter.

Interpersonal Problems. Members of the same primary group, like the family, friendship group, and social circle may very well be separated from one another in a nuclear emergency. This will not only cause anxious concern but deprives the individual of the familiar and meaningful inteactions and support which primary groups usually provide. Moreover, there will be the problem of living with and getting used to strangers, strangers from different socio-economic and ethnic backgrounds who have different values, attitudes, interests, and ways of behaving. Conflicts of values and practices with respect to observance of the Sabbath, sexual expression, acceptable language, sanitation and cleanliness, gambling, and quiet periods have caused problems in shelter living experiments. For example, while there was no problem of actual sexual relations among married or unmarried couples in the group studied by Altman et al (1960), teenage petting was fairly common. The teenagers themselves seemed to experience little embarrassment or guilt about such behaviour, but many of the adults and particularly older women and mothers with children were so opposed to it that they considered leaving the shelter. Strange to say, the young couples in the group without pre-trained leaders were never criticised directly for their behaviour. Apparently the adults took the attitude that "they aren't my kids and it is not my place to do anything about it".

Supervision. Life in a crowded shelter with limited supplies and facilities will necessitate much more supervision of individual activities than most of us are accustomed to in normal life. There will be rules and routines by which occupants must abide. This will produce annoyance and resentment, and problems may be created by the occasional individual who breaks the rules and becomes a nuisance. In an atmosphere in which numerous irritations are prevalent, some people may adopt the habit of watching others, picking up little infractions and making complaints. Others may rebel against every indication of supervision.

Environmental Conditions. Shelter conditions of lack of space, crowding, and limited facilities and supplies will also produce a number of problems in terms of specific environmental conditions. In addition to the factors of food, water, temperature, humidity, and oxygen supply mentioned earlier, noise, illumination and odors will be sources of stress. Although noise does not impair performance and ability to think, it does produce irritability, aggression, and fatigue. Studies indicate that noise may be one of the most annoying features of shelter living. Soundproofing of sections of a shelter may be indicated, and some children, teenagers and loud adults

may have to be suppressed. Illumination may be inadequate for some activities like reading on the one hand, while it may be disturbing to people seeking to sleep on the other. Presumably it may not be desirable to darken all of a large shelter at any one time, so this problem would have to be decided on according to the organizational and personal needs of the inhabitants. In a crowded shelter with limited facilities for cleanliness and sanitation completely adequate ventilation may not be possible, there are certain to be odours—body odours, odours from cooking, from waste products, and possibly from the dead. Fortunately, such odours tend to develop gradually and most people adapt to them to the point where they go unnoticed.

Dealing with Deviant and Emotional Behaviour

Some of the methods for handling deviant and emotional behaviour in the emergency period of disasters are applicable to problems which arise in shelter living (see Chapter 3 and 4). In this section we will focus on principles for handling problems unique to confinement situations.

Realistic Appreciation of People. The first principle in dealing with behaviour problems in a situation like that involved in shelter living is to recognize that people are not only physical but psychological, moral and spiritual beings with special needs on the one hand and great resources on the other. If we can accept the fact that problems will arise, we shall not be surprised by them. Knowing what kinds of emotional and other disturbing behaviours may occur, we can anticipate them and be prepared to meet them with preventive measures and remedial action. Accepting and understanding people as they are, we can be more patient and realistic in dealing with their weaknesses.

Leadership. Leaders and those who have a high status or are in positions of authority will often be the most appropriate persons to handle emotional or behaviour problems in the shelter living situation, whether these are rebellious in nature, involve interpersonal conflicts, or are emotional responses involving anxiety and despair. With the appropriate background of training and experience a leader will have a better idea of what kind of action is indicated, his word will carry the force of authority, and he is in the best position to mobilize and organize group support for his decision and line of action. Moreover, for those who need reassurance he should have and be able to select and convey the most appropriate information and it will be most credible coming from his lips. Finally, he is in the best position to arrange for isolation of difficult cases and to initiate those reorganization and control measures which may be indicated to maintain the social system within the shelter.

The controlling function of a leader was illustrated in the study by Altman et al (1960). When leaders admonished teenagers for petting behaviour, all such behaviour beyond hand-holding was completely eliminated with no visible expression of hostility or resentment on the part of the teenagers. As a result, teenage petting was no problem in those shelters with a structured management system, while it caused a great deal of tension and almost incited some people to leave the shelter in groups which had no such management structure.

Modification of Stressful Conditions. The most obvious way to handle a behaviour problem is to remedy the conditions which give rise to it. While it is usually not practical or possible to change all of the various conditions that have contributed to a given behaviour problem—conditions like the individual's history or genetic make-up, it often is possible to alter the immediate precipitating conditions sufficiently to bring the individual back to his previous and "normal" level of function. With reference to the problems which may occur in shelter-living, the tactic would be to change those conditions which are a source of stress to the individual, like lack of water, crowding, lack of variety of food, and inconveniences like the difficult sleeping arrangements. This would not, of course, be practical on a large scale. However, as a temporary measure in selected cases it may be feasible and have the desired effect. However, this method should be used with caution because an individual may be encouraged to expect and demand preferred and stress-free treatment. The method should probably only be used when it can be carried out under the close supervision of an official or a professional person, with the individual in question assigned to a patient role, and in a treatment atmosphere which emphasizes that the measure is temporary and conveys a positive expectation of rapid recovery and re-joining the rest of the occupants.

Provision for Information and Communication. One source of stress in shelter-living that may sometimes be corrected is lack of information or ambiguous information about outside conditions, the welfare of family members and friends, prospects for the future, and so on. If information is available on such matters, but is negative, it may be assumed that providing such information would do more harm than good. However, this is not necessarily the case. Because uncertainty be the primary source of the anxiety, giving the facts may clear up this aspect at least. Moreover, the end result probably depends more on the manner in which the information is conveyed. It should be provided by an official who has status and is a credible informant; the information should be offered in a matter-of-fact manner, with emphasis on the positive elements; expressions of uncertainty, fear and grief should be accepted with understanding and sympathy; and the sympathy and support of friends or relatives should be elicited for more worried members of the group.

Appropriate information may help to handle other kinds of behaviour problems in a shelter, problems involving jealousy, conflict, and suspicion over the manner in which supplies are being distributed or jobs and privileges allocated, and problems involving restlessness and the desire to leave the shelter. The tactic will nearly always be to provide accurate and frank information with the source specified—it may be possible to have the affected individual audit the information coming in over the radio, to have the information conveyed by an official to make it more credible, to combine reassuring information with bad news whenever possible, and to recruit the support of persons close to the disturbed one as a means of affirming the implications of the information. The latter tactic, of getting appropriate other people to participate in and support remedial measures, should be used with all kinds of behaviour problems whenever possible.

Purposive Activity. Another method of managing emotional and behaviour problems is to involve the individual affected in purposive activities, especially in the form of helping others. This will be particularly effective if used in the early stages of the development of a problem. Activities should be selected that are relevant to the interests, skills, and previous role behaviours of the individuals in question. Simple role assignment with, if necessary, assistance and supervision in getting started, will often divert the individual's attention from himself and his concerns to the

job in hand. Role assignment to helping and caring for others may facilitate the individual's reintegration into the group life of the situation.

Religion. People who have suffered disaster, lost loved ones, and faced danger and death are nearly always responsive to moral and religious reassurance and encouragement. Thus religious personnel, words, and symbols should be used whenever appropriate, and particularly in the case of individuals who are suffering grief reactions or who are losing hope.

Physical Restraint. On the rare occasions when a disturbed person becomes violent it may be necessary to use physical force to restrain him and perhaps to isolate him from the main group. A shelter manager should generally not seek to handle such problem cases by himself but use men from among the occupants. The idea here is that a violent person's strength and tactics are often unrestrained by any kind of caution or care for consequences, and the whole group might suffer if the leader were injured. Thus several able-bodied men should usually be recruited to impose physical restraint on such an individual The people will usually settle down within a few minutes, and may be rehabilitated to the group with appropriate counselling, information, and show of social controls. However, it would be well to keep such an individual under some form of supervision in case of another outbreak, preferably by an experienced counsellor-supervisor who could communicate with the man in a way to facilitate recovery. Individual counsellor-supervisors should be used whenever possible with disturbed individuals of any kind, especially after the acute form of the disturbance has been handled and rehabilitation is in process.

Controlled Expression of Emotions. It would probably be a mistake to seek to control and supress all forms of emotional expression under conditions where stresses are many and varied. On the other hand, it might be equally disastrous to allow free expression because of the infectious and disruptive effects of emotional behaviour in what in many respects is a crowd. The solution is to provide controlled opportunities for the expression of gripes, suspicions, fears, griefs, and so on. This should be done largely on an individual basis, by an official, counsellor, or stable friend who has been briefed on the problem.

Role Playing. Role-playing or self-persuasion techniques (Frank, 1961) may be useful for individuals who have difficulty in accepting the official or group policy. For example, for the individual who wishes to leave the shelter, the idea would be to get the person to present arguments in a small group discussion, for staying in the shelter. This kind of experience usually helps the individual to see the reasonableness of the point of view which he is defending as a role-playing participant. The method would be a delicate one in a shelter situation, calling for special skills on the part of the group leader or counsellor. However, it may help selected individuals. In general, the group discussion method of assimilating information and reaching realistic decisions can be most useful if led by the appropriate man.

Preparation for Emergence. It has been found in a number of studies of shelter living that the inmates experience great restlessness and a strong urge to leave toward the end of the period. In a nuclear emergency this would present special problems because of the contamination dangers outside and because of the difficulty in providing precise predictions about when they would pass. It would probably be advisable not to make definite estimates of when people could leave the shelter

but rather to set up and carry out a schedule of periodic tests. The results of such tests should be reported to occupants in terms that will have personal meaning for them, for instance, in terms of the probable effects on their health. Another possibility is to send small reconnaissance parties out for specified and limited periods of time, provided with the appropriate protective clothing of course, and with specific exploratory objectives. The information that such parties bring back, appropriately shared with occupants, will provide a realistic basis for their expectations. In the individuals who are particularly bothered by waiting for rescue or exit, the controlled-expectations method of Alcoholics Anonymous may be very useful. The tactic here is to cultivate the practice of looking ahead no further than the day in question. Thus the individual thinks to himself, in the moming. "This is a new day and I will live it for itself, concentrating on the problems it presents so that I can look back in the evening to a sucessful day." This kind of controlled expectation can best be cultivated in small groups and on a routine basis.

Practical Preventive Measures

As with most problems, prevention is the most effective corrective measure. It precludes the occurrence of many problems and makes others less serious and more manageable. A number of practical preventive measure (for the control of emotional and human problems under shelter living conditions will be discussed in this section (cf. Staff College, Textbook for Shelter Management Instructors, 1964).

Leadership. Leadership is probably the single most important factor in the prevention and management of problems in shelter living. This is to emphasize the key role of the man and men who are in charge, or who take charge, and supervise, coordinate, initiate and control the group's policies and actions. In some situations it may involve a single individual; in others it may embrace a number of persons and so constitute a management system. It is singled out as a preventive factor because appropriate men can usually be selected and trained for leadership roles with much better results than when the situation is left to emergent leaders.

Emergency shelter experiences during Hurricane Carla illustrate the importance of planned leadership and supervision. Carla moved in from the Gulf of Mexico at a sufficiently leisurely pace that most of the people in its path had time to take protective measures or evacuate. Over half a million took the latter course of action. Many of these were cared for in some 650 shelters, from hotels to school houses, which were provided and improvised on relatively short notice (Moore et al, 1963). Out of all these shelters, trouble was reported in only 10 or 12, which illustrated the effectiveness of planning, training, and organization in such a situation. Where trouble did occur, it was attributed to either the lack of adequate supervision or the nature of the occupants of the shelter. In general, trouble occurred only when the greater proportion of the occupants were from the lower socio-economic class and included people who were inclined to be uninhibited in satisfying their urges. In one instance, 200 people went to a schoolhouse in Houston and, unsupervised, they engaged in a virtual riot, smashing windows and bottles, defacing the walls, and burning the school flag. When they left, they stole many of the articles which were still undamaged. In another instance, when supervisors arrived just after dark they discovered gambling, drinking, purse snatching, fights, fondling, perversions, and open sexual activity and prostitution. When an attempt was made to distribute anything like blankets, this nearly started a riot as people rushed to grab as much as they could whether they needed it or not. In another case, a number of cases of mumps, trench mouth, influenza, diabetes without insulin, blood poisoning, cardiac condition, and individuals with emotional problems were neither isolated nor treated until supervisors arrived. In a number of shelters, drinking proved to be a problem if supervision was not strict. When the police emptied the bottles in one instance, this created a further problem by producing withdrawal symptoms.

Little can be done about the kind of people that would end up in shelters in a nuclear emergency. People whose habits of life have been typically anti-social, immoral, and disruptive may be expected to behave in character in a confused and unstructured group situation, especially if there is not adequate supervision and control and if there is not some over-riding and continuous threat such as that from falling bombs and fires—which would serve to take their attention and so prevent such behaviour. Because we cannot change the history of such people before they enter a shelter, the only solution is appropriate leadership and supervision and these can be planned as preventive measures.

A comparative study (Altman, et al, 1960),of several groups undergoing a two-week shelter experience, some with trained shelter managers and some in which the situation was left up to emergent leaders, demonstrated the value of trained leadership. The presence of trained leaders increased the overall adjustment of the occupants and resulted in less tension at the crucial shelter entry and shelter release periods and less of the depression which often occurs in the middle of confinement. Group cooperation and morale remained generally high throughout, and there was less disagreement and resentment toward shelter managers. The occupants came out with more positive attitudes toward shelters, civil defence, and toward their fellow occupants. In addition, trained leaders were able to carry out in-shelter training programs designed to prepare the occupants for post-shelter survival. In groups in which pre-selected managers were not included, a leader did emerge in each case. However, they were authoritarian and their behaviour tended to alienate the other people in the shelter. When they suggested unrealistic procedures, which then failed, the group lost confidence in them. In general there were more conflicts, adjustment problems, and poorer morale in such groups. In one instance, the emergent leader himself became seriously disturbed and had to be removed. The findings in this study point up two advantages for a pre-selected and trained leader; first, the occupants will generally question his authority less, and second, he will be prepared to deal with the practical problems which arise in such a situation.

The selection and training of shelter managers should take account of the points mentioned under the section on *Leadership* in Chapter Four. In general, leaders should be selected on the basis of their history of experience in similar situations and on other personal qualities. Their training should be in terms of the kinds of problems which they are likely to meet. It is important to plan for a management system with subleaders, professional personnel like physicians, communications experts, counsellors, clergymen – all integrated into a working organization. The use of films and realistic rehearsals would facilitate the development of such a management structure. In essence, to be prepared with an operational management structure is to enter the situation with a pre-established social system, and this is the best means for controlling and directing human behaviour.

Organization. It is essential to provide for organization of the people in the shelter—otherwise we are dealing with a crowd situation. Organization of people into appropriate groups, with group leaders, facilitates orderly and efficient use of space, food, and other supplies, of hygiene and other facilities, and of specialized personnel like physicians and clergymen. Organization provides the framework for informal person-to-person communication on the one hand and for official communication on the other. Organization into small groups also provides the means by which people can feel more secure. Finally, it constitutes an important basis for the social control of behaviour. The size and make-up of groups will depend to some extent on the physical nature of the shelter and on the population from which occupants are drawn. In general, it is suggested that groupings include between 10 and 25 persons and that each group have at least one or two individuals who can serve as leaders or counsellors. There should be a roll call for each group with detailed registration data on each individual—including address, location before entering shelter, physical condition, skills and personal resources, and location and assumed disposition of family members and other relatives.

Organization of the occupants of shelter can best be attained by prior planning, with selection and training of leaders and specialized personnel and their integration into a management structure. Although considerable confusion and chaos are probably inevitable as people stream into the shelter, a pre-arranged organizational structure will order the situation rather quickly. The rapid development of organization would also be facilitated by such tactics as having lines drawn on floors to indicate groupings.

Information and Communication. Because lack of or ambiguous information leads to uncertainty, confusion, and anxiety, especially in emergency situations and when people are subject to separation anxieties and concerned for the future, every possible measure should be taken to provide for communication and the exchange of information within the shelter and between the shelter and the outside world. This will require, in the first place, the planned availability of communications equipment and personnel. Given the facilities, the problem is then one of policy and practice. Operational messages within the shelter and with the outside world will presumably take some precedence, but the exchange of personal messages should not be neglected as these may allay anxiety and prevent emotional problems. Messages should generally be cleared with the shelter manager or with an information officer, and they should be recorded. There should be a routine information program for occupants, as a means of stabilizing their expectations, of letting them know that they are considered important, and of simply informing them of developments. It might be well if the "official" voice or that of his deputy, always gave the important information. This could build up credibility in his information and confidence in his judgement, thus reinforcing his decisions. Information of a "conversational" and humorous kind should not be neglected as this can reassure and build up morale. Operational information should be relevant, accurate, concrete, directed to the appropriate officials and through the appropriate channels. Information which is threatening to the occupants should include or be accompanied by the appropriate amount and kind of reassurance and by specification of the actions that may be indicated.

Provision for Physical Needs. This is a matter of planning and providing for some minimum of the physical necessities for life and relatively adequate functioning. The maximum number of occupants should be predicted. Water and food, a variety if possible, are essentials. Provision should be made for the disposal of waste products, and for the control of temperature, humidity, illumination, noise, odours, and facilities for sleeping. Planning and training will facilitate the orderly use and maintenance of these physical supplies and conditions. It may be well to keep a record of the use of supplies, with periodic inventories.

Use of Group Decisions. Goals, standards, and practices within the shelter should be worked out with the consent of the group as far as possible. Whenever appropriate, occupants should be involved in making decisions, especially those which affect them. Use of the group for controls, sanctions, and discipline will prevent many problems and decrease the seriousness of others.

Use of Occupants' Personal Resources. The occupants of a communal shelter will have a variety of skills, knowledge, and roles which should be utilized. Especially important are those that would facilitate socialization, the development of purposeful and recreational activities, and the management of particular problems. People may be taught how to improvise and to improve their situation in the shelter. One possibility is to provide shelters with the tools and supplies with which to make up some of their facilities, such as do-it-yourself kits. Teachers and older children may be assigned teacher and baby-sitting roles. It may be indicated to assign some adults the role of parents to children whose parents are not present.

Use of Natural Groupings. Primary groups like the family should be kept together as much as possible. They are a powerful source of emotional support for one another as well as a basis for control. Other natural groupings like language groups, religious groups, or even professional and labour groups can provide a basis for communication, socialization, expression and control, and may indeed come to function almost like a primary family group in an emergency situation. Clergymen should be present in a shelter if at all possible because of peoples' needs and responsiveness to religious and morale encouragement under such conditions. They should be provided with the facilities to be of service to the occupants and given every opportunity to play their role. In addition to these provisions, special facilities should be planned for the care and possible isolation of particular groups of people, such as children, the elderly, the bedridden, pregnant women, and emotionally disturbed individuals.

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Mealtime Routines. Mealtime is traditionally the occasion on which the family gathers in our society. It may be used to strengthen family or small group solidarity and can constitute a positively expected break in an otherwise unsatisfying situation. A number of practices will facilitate its contribution to morale and good feeling, like observing specific mealtimes, having women prepare the food and serve it gracefully, offering a table prayer, cultivating an air of dignity, and encouraging a routine of good manners.

Personal Hygiene. Provision should be made for some minimum standard of personal hygiene and cleanliness, with as much privacy as possible. As a means of ensuring this in a group it may be desirable to have routines to be followed.

Exercise. Some provision should be made for interesting and routine exercise. This can relieve boredom and also enhances physical stamina and psychological well-being

Preparation for Post-Shelter Living. Plans should be made to give instruction and training for the post-shelter and recovery periods. The social system within the shelter with its various groupings could well form a basis for coordinated rehabilitation efforts. Individual skills and knowledge should be utilized wherever possible. Lectures together with group discussions and planning would probably form the best vehicles for such a program. As the situation permits, planned brief trips out of the shelter should be initiated as soon as possible, with the specific objectives of gathering information, getting supplies and beginning recovery. Somewhat later it may be possible to work outside of the shelter during the day and return at night without undue exposure to radioactive contamination.

In conclusion, it should be emphasized that communal shelter living can have many positive aspects. When a group of people face a common challenge and fate, with risks and hardships, they generally become much closer and develop a unique sense of "community" and solidarity. Close and enduring frienships have been formed thus, between soldiers in combat, prisoners of war, and trapped miners. Individuals have realized a new sense of their toughness and staying power. And many have experienced a new appreciation of the essential humanity of man. Such positive features of shelter living can be cultivated and enhanced by the appropriate kind of planning, preparation, and management.

Suggested Readings

Altman, J.W., et al. *Psychological and social adjustment in a simulated shelter.* Sponsored by Office of Civil and Defense Mobilization. Pittsburgh: American Institute for Research, 1960.

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Chapter 7

PREPARATION AND TRAINING

Summary

Basic training for emergencies may be promoted and expanded through existing accident prevention, safety, and first aid programs of public, business and voluntary organizations. Planning and preparation for the larger problems of natural and wartime disasters is probably not feasible on a mass scale because of political and motivation problems. One alternative would be to develop a highly organized network of emergency measures groups, embracing existing emergency, service, health and welfare agencies. Integration of the latter would require special attention to problems of group identity, authority, and division of responsibility and labour. In general, personnel should be selected for the qualities of competence, responsibility, cooperation, stress tolerance, social status, and leadership. The three main bases for selection are the individual's history, psychological tests, and selection by training. Recruitment of individuals and groups from public service and business organizations and of citizens with special skills may be carried out through public appeals, by appealing through the individual's organization, or by direct personal appeals. Whatever the method, recruiting will be more successful if the appeal comes from persons with social status and credibility, if there are material and social inducements, and if there are compensations for lost of time, money, and other cost factors. The two main problems in training are maintaining recruits' participation and providing optimum conditions for learning. The appropriate use of social and material incentives and provision of compensation for cost will usually handle problems of motivation. Three principles are important in promoting learning: appropriate reinforcement for correct and incorrect responses, orderly presentation of information and tasks, and practice. Organization is essential in emergency operations and this hinges on coordination of services and personnel, the allocation of authority and responsibility, and on communication. Operational plans and procedures should be worked out in detail, made known to all relevant personnel, and rehearsed. An overall plan for meeting emergencies includes prevention, preparation, and training, and the adequacy of these in turn rests on the supporting organizations.

Need for Training

The risk of injury or accidental death is fairly high in our mobile and mechanized society. Over 10,000 Canadians died in accidents in 1964, and another 139,000 suffered minor to permanently disabling injuries in motor vehicle accidents alone. Each accident constituted an emergency for one or more persons, usually including family members. The majority of the accident emergencies could have been prevented or at least reduced in severity, if people had heeded warnings and taken appropriate protective measures. As for disaster emergencies of fire, flood, wind and nuclear explosions, most people are even less well prepared. Yet if these occur, and a community is not prepared, they may produce widespread destruction of life and property. Why does man not prepare for emergency situations? Under what conditions would he prepare and train for emergencies? What are the main psychological considerations in the development of an emergency measures policy, in the selection, recruiting and training of personnel, in building an emergency measures organization, and in preventing emergencies?

Policy Considerations

Emergencies may be grouped in three catagories: accident emergencies, natural disasters, and nuclear disasters. While the impact of accident emergencies may be devastating to an individual or family, the repercussions on the community or society are relatively minor. Accidents are scattered through society and over time, and they produce little or no disruption of the social system. On the other hand, the total cost of accidents in terms of lives, injuries, and damage, adds up to frightening figures every year and comes to more than the cost of natural disasters and wars over the years. Thus accident emergencies are a major "cost" problem in our society. Because accidents are so frequent, they are more relevant to the experience and concerns of most people than are natural or nuclear disasters. Because of this, it should be easier to arouse interest and motivation for programs of prevention and preparation. Moreover, basic training for accidents emergencies would be most useful in the event of natural or nuclear disasters. This line of reasoning leads to the conclusion that the best policy would be to involve the whole population in training for accident emergencies. Is such a policy feasible, and what are its implications?

Again it is important to maintain the distinction between accident emergencies on the one hand and natural and nuclear disasters on the other. It may not be too difficult to develop: an inclusive program of training for accident emergencies—or to use a positive phrase, of training for *public safety.* Presumably most schools give some instruction now in accident prevention, and some are offering driver training courses; other institutions like the YMCA and Red Cross provide training in water safety behaviour; training in first-aid is offered by a number of groups and institutions like the St. John Ambulance, Red Cross and others; and many companies have specialized accident prevention programs. Although somewhat limited in the kind and extent of the instruction they offer and in the population they cover, these programs could provide a starting point for broader kinds of emergency measures preparation and training. Emergency measures organizations could offer their resources of personnel, facilities and equipment to any group which has first-aid and accident prevention programs—to the YMCA, to schools, to industry, and so on. Appropriately planned and presented, such assistance might also be offered on a munici-

pal or provincial basis through school boards, departments of education, or company headquarters. The emphasis should be on accident emergencies, natural disasters, and public safety. It would be essential to shape the approach according to the experience, interests, and sensibilities of the particular audience.

Such a program of public safety, concentrated on accident emergencies, could make significant contributions to the overall objectives of emergency measures planning. Using the right personnel and imaginative methods, the public image of emergency measures organizations would be enhanced. More people would be given the basic skills for dealing with emergencies of any kind. And a potential source of personnel for emergency measures organizations would be built up.

While a general program of training for accident emergencies would be very fruitful, it would not provide for some of the major problems in dealing with natural and wartime disasters. The latter require highly specialized communications, health, welfare and other personnel; and they call for detailed planning and organization. What are the requirements and possibilities on this level?

One view is that most of the population should be involved in preparation and training for large-scale disasters. Is this feasible and what are its implications?

It is quite clear this is not practical on a voluntary basis. Many people are not sufficiently interested or motivated to prepare for disasters. For one thing, disasters are relatively infrequent and scattered in the lifetime of a society. Even in areas of the United States that are susceptible to tornadoes, it is very seldom that disaster strikes a community more than one in a generation. Because such emergencies are relatively infrequent, the largest part of the population has had no sensitizing experience which might have evoked an interest in preventive measures. Indeed most people are probably adapted to the potential dangers of disaster by a kind of remote-miss experience which is perpetuated by the mass media of communication. Newspaper, T.V., and radio tend to bombard the public with verbal and pictorial accounts of accidents and other emergencies. The great majority of the audience, not personally involved in these events, tends to develop an attitude of indifference and even feelings of invulnerability. This is not to say that this is all bad; it is probably well not to be too sensitized to potential hazards. However, there is little evidence that a more realistic solution, namely of being sufficiently sensitized to take preventive measures, is promoted by the daily fare to which we are subjected.

Another aspect of people's lack of interest in preventive measures is the sheer improbability of disaster in a given person's life time. This being so, it is not reasonable to spend time and effort preparing for something that may never happen. Transport, communications, and other businesses do not provide for highly improbable peak loads. Even those people who have gone through a disaster, though they be sensitized by the experience, are likely to think that it will never happen again to them. Man tends to learn by and live in terms of the probable, and the evidence that a disaster may strike this or that community is not very convincing.

Cost factors are also important in deterring people from preparing and training for emergency situations. Preparation and training take time and effort, and may even involve some outlay of money. Moreover, there are the negative factors of the reactions of a man's neighbours and friends; they may think he is afraid, foolish, or has ulterior motives of getting position and influence. Many people are not averse to expressing such attitudes, and at the very least are unlikely to offer supporting gestures. In addition to direct costs, involvement in a program of preparation for emergency will usually entail some sacrifice in terms of the individual's other interests, activities and involvements. In so far as these are usually frequent rewarding engagements, it is difficult for emergency training to compete with them. Again, a person's priorities will tend to be determined by his past experience of the differential frequency and reward value which different commitments and activities provide.

Finally, there is considerable evidence that many people react to the possibility or mention of a great catastrophe with feelings of helplessness, apathy and inertia. They feel they can do nothing about it anyway so "what's the use?"—of thinking about it, or of trying. The result is a kind of fatalism. They ignore the possibility and consideration of what they could do about it, and so avoid the vague anxieties which would be aroused. There are no studies on the prevalence of this attitude in Canada. However, we can be sure it exists and keeps some people from facing up to the possibility of disaster and taking protective measures.

These deterrents to preparation for emergencies like nuclear war can be countered to some extent, using the methods to be mentioned later in connection with recruitment and training. However, to deal with these deterrents in the whole population, on a voluntary basis, would be a formidable undertaking.

One way to implement large-scale training for disasters and by-pass the above motivation problems would be to make such a program compulsory by law. This is the solution adopted in some European countries and in the Soviet Union. For instance, in Sweden civil defence training is compulsory between the ages of 16 and 65 unless the individual is in the Armed Forces. When 16 years old, each youth is enrolled and given 60 hours of civil defence training the first year, followed by 20 hours in the second and third year and periodic refresher courses thereafter. In the Soviet Union such training is compulsory between the ages of 16 and 60 for men and between 18 and 58 for women (Gouré, 1962).

However, the compulsory solution may not be politically feasible in Canada. Although we are willing to support compulsory academic education, compulsory training for emergencies would be anathema to many because of its possible association with military conscription. It might be viewed as some violation of freedom—although this does not seem to be a problem in democratic Sweden. Another possible argument is that compulsory training would contribute to the general commitment to conflict and war. This would not seem too valid in view of the purely defensive nature of training for emergencies on our home ground. Moreover, it is unlikely that a compulsory emergency measures program in a country of Canada's size would upset the "balance of terror" which apparently obtains today—at least not more than the compulsory programs in some European countries. Any tendency in this direction could be more than countered by the country's open and dedicated commitment to prevention of wars.

Another consideration with respect to a massive program of preparation for disasters is that of maintaining a constant state of readiness. A few authors such as Sinha (1954) suggest that it would be difficult to live in a constant state of readiness for crises. The implication is that living in a constant state of high arousal and vigilance would detract from everyday efficiency and would possibly promote the development of emotional problems. This view stems from a misunderstanding of what readiness means. To be prepared and ready for emergencies simply means that the individual has learned to discriminate among various warnings signs and between warning signs and indications of reassurance, and that he has acquired and has available the appropriate responses. He will not be in a continual state of arousal and vigilance, because the alerting stimuli are not constantly present. However, when certain warnings signals do occur, these will produce the appropriate vigilance and ready him for action. To illustrate, the trained boxer is not in a constant state of readiness to fight, but he may become ready very quickly by virtue of the build-up during preliminary training and when he steps into the ring. Likewise, members of the Armed Forces are prepared and trained for various dangers and emergencies, but they are not in a state of high arousal, tension, and vigilance all of the time. Their training has sensitized them appropriately to the danger signals with which they must deal and has provided them with the emotional resistance and coping behaviours which will enable them to behave effectively in battle. They are prepared for battle, but they do not live in a constant state of readiness for battle.

The only sense in which maintaining a constant state of readiness may be a psychological problem is that in which people are continually bombarded with warning signs, but have no available plans and coping behaviours. This may be the situation when the population is exposed daily to information about the possibility of war and the dangers of nuclear weapons, but are given no constructive information and no real opportunity to prepare themselves. This would probably be detrimental, either because it produces adaptation to the information or because apathy and emotional resistance to participation in training programs are built up. However, it is unlikely that any training program would utilize such methods; rather the focus would be on developing people's emotional resistance, discriminations, and coping behaviour. Thereafter, they would be less vulnerable to indiscriminate warnings, and would suffer less anxiety because they are ready with some coping behaviours.

A compulsory program of training for large-scale emergencies would imply that it is important to have close to 100 per cent participation. This may be desirable for the emergencies of every day life, but it is not at all clear that it is necessary or even desirable for disasters and nuclear emergencies. For one thing, it may be difficult to justify on economic grounds. Moreover, a community's response to major disaster may be just as good if about 10 per cent of the population has had appropriate training, especially if that 10 per cent includes the right people in terms of their skills, roles, leadership and organizational abilities. It should be emphasized that this is an estimate; investigations might reveal that the figure should be somewhat higher, or even lower. Thus, maintaining a clear distinction between training for public safety in terms of every day emergencies on the one hand and preparation and training for disasters and nuclear emergencies on the other, the latter may require only a percentage participation by the population to be adequately effective.

For the time being, it is probably best to assume that compulsory training for disasters is not feasible in Canada, and that such widespread preparation and training *may* not be necessary in any case. The alternative is to develop a network of highly organized groups of emergency measures personnel, with appropriate facilities and equipment, and with detailed and rehearsed plans for dealing with natural and wartime disasters. The size of such groups is a matter for investigation. Their composition will depend on the kind of disasters and problems for which they are designed. However, assuming that they should be prepared to deal with natural disasters due to things like fire, flood and earthquake, and with nuclear emergencies, we can say that they should include civic officials, medical and paramedical personnel and facilities, communication and transport personnel and facilities, control personnel like police, firemen, and armed forces, welfare and relief personnel, public utility and service personnel, and other specialized groups like office clerks, undertakers, and so on. The problems then are selection and recruitment of the appropriate personnel, training, and their integration into an organization that will be viable and effective in a range of emergency situations. The psychological aspects of these problems are discussed further, below.

Selection of Personnel

Having decided what kind of an organization we want for large-scale emergencies, the next step is to set down the kind of personnel that are required. The details of this will vary according to local circumstances, but keeping in mind the main objectives and functions of emergency organizations, we can specify the general requirements which personnel should meet.

(1) Competence – Personnel should be selected on the basis of their competence for the particular job in question, competence in terms of technical skills, medical skills, organizational ability, ability to deal with psychological disturbances, and so on.

(2) Responsibility – There is no point in selecting and recruiting personnel who are not responsible. They should be conscientious, reliable, and exhibit role stability—that is, they should be imbued with the value and importance of their role, whether as a firemen or a physician, and it should be a high priority and pervasive way of life for them. This is to say that the role they fill in the organization should be something incidental, which would probably be forsaken in a crisis.

(3) Co-operation – Personnel should have the ability to work with others in a coordinated and constructive manner.

(4) Stress tolerance – It is important that personnel for emergency measures organizations be able to stand up to stress without undue emotional disturbance.

(5) Social status – At least the proportion of personnel who will be most visible as members of the organization should have respect and some social status in the community. This will contribute to the image, authority, and credibility of the organization in its various activities and especially in emergency situations.

(6) Leadership qualities – Selected leadership qualities of the kind detailed in Chapter 4 would be essential in the leaders of emergency organizations. It would also be important to have some of those qualities in most of the personnel so that they could provide leadership and direction to other people in a disaster situation. It is neither necessary nor practical to aim for all leadership qualities in

every man, but selected ones should be requirements for personnel according to their place and role in the organization.

It goes without saying that the above requirements for personnel will also constitute objectives of training within emergency organizations. However, some of them depend on a long history of experience and training, and others, like social status, are attributes developed in society at large. Thus it helps a great deal if one starts with individuals who already have the qualities to a considerable degree.

There are three main ways to select personnel according to pre-determined criteria: the individual's history, psychological tests, and selection by training. One of the best ways to predict how an individual will perform in a given situation is to look at his past performance in similar situations. For example, if we are looking for medical skills for special kinds of problems, we shall select a man with medical training and demonstrated experience in that area. Likewise we shall look for individuals with training, experience and demonstrated competence in organizing activities and in working with others; individuals who have demonstrated resistance to stress; and individuals who have status and social influence with their fellow citizens. Interviews, letters of reference, and interviews with persons who know the candidate are the main methods of getting the requisite information. It is essential to know what qualities and behaviours are desirable and undesirable, and the kinds of situations which are relevant. These should be probed, whether in interviews or letters of reference.

Psychological tests may make a significant contribution in the selection of personnel for an organization. They are not a sufficient criterion in themselves but are especially useful for getting behind a superficial show of knowledge and ability, for getting beneath the smooth exterior which some people exhibit, for determining a man's personality organization and control, for getting at qualities like assertiveness and compliance (North, 1950), and for determining a person's interests. Appropriately used by competent personnel, and with due regard to base rate phenomena, tests can make a contribution not only to selection but to placement of personnel within an organization.

Selection of personnel on the basis of their performance in training is a reliable means of getting the right people, especially if the training includes demanding exercises and realistic situations. This method is particularly useful in showing up weaknesses, lack of competence, and lack of the appropriate leadership qualities. It has the advantage that the individual may himself realize his inadequacies and either seek out further training or be amenable to another placement. Shelter living exercises, as brief as two days, under realistic conditions and with simulated problems, have made individuals aware that they were not suited for certain leadership roles. However, there are two limitations with the selection by training method: It is a second-order method in so far as individuals must be in the organization already; if they don't have the requirement, it may be necessary to release them or at least place them in another position. Second, the method may not point to those individuals who *have* the important qualities—because they have not had an opportunity to demonstrate them. Thus it is important with this method to provide adequate opportunities for individuals to test their ability in a variety of realistic situations and exercises. In general, the most successful selection program will utilize all three of the selection procedures; history, tests, and selection in training.

There is one problem of selection with which emergency organizations can do little directly. It is that of the personnel who make up emergency and service organizations like the police, firemen, Red Cross, and so on. It is essential to have such groups integrated into the overall emergency measures program. However, they will have their own requirements for personnel and their own selection procedures. On the other hand, most of them will be doing an adequate job in this regard, on the basis of their own history and experience. It might be useful to exchange personnel selection information between organizations, with a view to promoting understanding of different frames of reference and developing better and coordinated selection methods.

Recruitment

An overall emergency organization must draw on the resources of those emergency and service agencies which are already established to handle various aspects of emergency situations. These include such people and groups as civic officials, the police, firemen, health and welfare departments, hospitals, voluntary emergency agencies like the Red Cross, St. John Ambulance, and so on. In most cases it would be wise to recruit such organizations as a whole. Generally speaking, this should be not too difficult, especially if the request is sponsored by government at the national, provincial or municipal level. Moreover, these agencies exist in large part to deal with emergencies, so that the objectives of an overall organization should be relevant to their own interests. However, recruitment of the active collaboration of such agencies is almost certain to present difficulties. For one thing, our present service and emergency agencies tend to be jealous of their identity and status in society. They will be apprehensive about losing these in any merger with an overall organization. They will be uneasy about the possibility of giving up those functions with which they have had experience and are familiar, and on which they have built their role and image in society. Having a tradition of experience and success, they may well question the competence and ability of a new overall directorate to manage emergency operations. Second, most of these agencies are primarily concerned with accident and other social emergencies, and at most with natural disasters, and many of their members are not concerned with nuclear disasters. Thus one of the main objectives of an overall organization, that of preparation and training for nuclear emergencies, may not be relevant to the interests of such agencies. Moreover, these agencies are preoccupied and busy with their day-to-day objectives and functions and may have little time and energy to devote to the larger plan. Third, while the collaboration of an agency may be recruited on the official level, getting the active cooperation of agency members may be another matter. The main problems here will be relevance to the interests and concerns of such individuals, motivational deterrents like those mentioned earlier, and cost factors of time, inconvenience, and so on. These problems may be especially evident in agencies that are largely made up of volunteers.

Recruitment of selected individuals and groups from public service and companies like those responsible for power and communication services will also present difficulties. Such companies have accident prevention and other emergency measures training programs which would stand them in good stead in the event of a natural or nuclear disaster, but these programs are seldom integrated with an overall plan or organization. Getting the company's official cooperation for overall planning and preparation may not be too difficult, but this will not ensure active cooperation either on the organization or individual level. At both levels one is dealing with individual persons who must be convinced of the importance of the endeavour and they must be motivated with the appropriate social and material incentives. Participation would involve cost factors to the company and the individual, time, effort, material and social, and these must be countered with appropriate compensations.

The other general source of desirable recruits for emergency organizations would be citizens with special skills and qualities, like physicians, nurses, pharmacists, scientists, technicians, and so on. Generally speaking, such people must be procurred on a voluntary basis, and this will not always be easy. One would think that some, like physicians, would be interested because of their training for and commitment to emergency services. However, it must be recognized that social, large-scale and nuclear emergencies are not really very relevant to them. The physician's primary concern and constant preoccupation is with individual patients. He is usually over-committed in terms of patient load. He is generally not too interested in the organizational problems of emergency work. As a result, he may not be very responsive to general appeals to participate in training and preparation for natural and nuclear disasters. A general appeal through his professional organization is not likely to be more successful. Those physicians who work full time in hospitals, public health personnel, and other potential recruits that have an employer, may be more responsive if their employer backs the program and provides the appropriate sanctions and inducements. In general, however, the desired volunteer recruits will not be easy to come by.

It is quite clear that recruiting the active collaboration of agencies, groups, and individuals for an emergency measures organization is not a simple matter. In the end, one is dealing with individual persons with their own interests, preoccupations, concerns, and commitments. Even when they are recruited on a compulsory basis, they may give little to and even detract from the overall program. Officials in the Soviet Union have had considerable difficulty in this regard with their compulsory civil defence training program. The problems are essentially motivational and we will now discuss three methods for dealing with these.

Public Appeals. The method of public appeals is a common means of recruiting people's interest and participation in various activities. The communication mass media are such that most people can be reached, and reached repeatedly. The main difficulty is that people tend to build up a kind of resistance to communication from the mass media, viewing them with some skepticism and detachment. They get such a variety of "facts" and opinions from these sources that their credibility is not very high. However, if such communications utilize the principles of relevance, people's need to identify with some group or movement, and the credibility and drawing power of status informants, they will have a fair degree of success.

The first means of increasing the effectiveness of public appeals is to spell out the relevance of preparation and training for emergencies to people's experience of accidents and illness. Moreover, the gains from developing adequate coping behaviours should be made explicit and dramatic. This would undoubtedly attract the interest of some people, but it would be unwise to expect large numbers to respond. For one thing, it is difficult to impress people with the relevance of natural and nuclear disasters because they are infrequent, a probability that does not seem serious at the moment. Even persons who have experienced an accident emergency tend to think that it will not happen to them again. Moreover, people are inclined to put unpleasant experiences and possibilities out of mind, to suppress thoughts of them, and to evade issues that raise such possibilities or memories.

The second means for increasing the impact of public appeals is to appeal to people's identification with the community, their country, and "good causes". This nearly always attracts some people. However, the method must be used with caution because it may attract social climbers, persons who are looking for ways to overcome lack of self-confidence, and individuals who are looking for influence and power. While some such individuals may be integrated into an emergency organization, they may not have the specific skills, roles, and personal qualities which are desired. Moreover, their presence in the organization may detract from the positive image which the organization must build.

The third tactic for increasing the force of public appeals is to associate them with individuals in the community who have status and credibility, and if possible have the appeals made by such individuals in person. This method will catch the interest of some people, but again caution is indicated because of the kind of people who may come forward. The appeal is essentially based on their motivation and will not be selective in terms of skills, stress tolerance, and other qualities required in recruits.

The principe of appealing to people in terms of the material and social incentives and opportunities which participation in an organization offers will also evoke a response in some people. The difficulty with this method is that it may attract individuals who for some reason or other have not been able to develop and take advantage of such opportunities in society at large. Thus some of those who respond may have personal limitations. It may well be possible to overcome such limitations in training, but there are advantages in starting with people who have the desired qualities.

In general, public appeals for recruiting specialized personnel for an organization are often disappointing. Moreover, they tend to bypass the selection stage. The latter limitation can be overcome by applying selection procedures to those volunteers who come forward. However, if some have to be rejected for one reason or another, they may detract from public goodwill for the organization. Rejection of status seekers may be particularly damaging in this regard.

Appeals through Organizations. The second method of recruiting personnel is that of appealing to them through their employer organization. The first step here is to convince management of the relevance of the emergency program to their own social and material objectives. If the emergency organization carries the official sanction of governments, this will constitute a persuasive introduction to management. However, it will still be necessary to carry the argument to them in one-to-one and small group discussions. The social status, credibility, and skills of the emergency organization proponents will be crucial. It may also be necessary to offer concrete inducements and compensations to the company, such as pay for equipment and facilities, for time off of employees, and so on. It will then be up to management officials to suggest particular individuals and eventually to approach them with the proposition. Here again the approach should be on a one-to-one or small group basis, with emphasis on the relevance of training for emergencies, and with the offer of concrete social and material incentives like those to be mentioned later. Appropriately carried out, recruitment through organizations and companies may be very effective, and it also provides an opportunity to select personnel on the spot.

Direct Personal Appeals. The third method for recruiting personnel is that of a direct approach to selected individuals in a one-to-one or small group setting. This method has the advantage that recruiting can be selective from the beginning, directed to the few individuals in each section of the community who have the desired skills and personal qualities. Information should be offered in such a way that it is relevant to the receiver's past experience and to his concerns about his self-image and about the welfare of his family. There should be an opportunity for questions and discussions, that disturbing elements may be absorbed. Emphasis should be placed on the opportunities for developing coping behaviours and on the social and material incentives which will be provided. Carried out by individuals with the appropriate skills, social status, and credibility, this is probably the most powerful method of appealing to potential recruits.

Janis (1951) reported an investigation which illustrates how this approach may work. Twenty-nine men and women of various educational and occupational backgrounds were given intensive interviews in the summer of 1950 in order to determine the kinds of attitudes and reactions that they had to information about the atomic bomb. In general the respondents expressed moderate but superficial approval of civil defence preparations in the United States. They took a rather detached and complacent view of the threat, apparently believing that the danger of bombing attacks was remote, and that if there was any real danger the government would see that the population was protected. Even those who admitted the possibility of bombing attacks on the country held the threat at arms length by believing that it would not happen for at least a number of years. As one middle-class housewife said,

> I haven't been thinking at all about the possibility of war or anything like that because it is such a long ways off—about 15 years or so from now. I believe that Russia has so much to do in order to prepare for war that they won't start anything and I don't think the United States is planning to.[1]

However, it was found that such optimistic attitudes were rather thin in most cases and represented a kind of front or conventional way of handling the threat and of ignoring it. When the interviewers tested the strength of respondents' beliefs by giving them concrete information about the magnitude of danger posed by the atomic bomb, many of them changed their responses from disapproval of civil defence preparations to spontaneous approval. For instance, when respondents were told that thousands of injured required but could not get immediate medical treatment after the bomb on Hiroshima, that fires killed many people, and that tens of thousands suffered from lack of food and shelter, a school teacher said:

> Oh, well, in that case I would be completely in favour of a civil defence organization. I would feel that we ought to get going on it right away if it really could make that much difference. I really haven't read much about atom bomb casualties and I didn't realize so many could be

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[1] From *Air war and emotional stress,* by I.L. Janis, The Rand Corporation. New York: McGraw-Hill Book Co., 1951. p. 235. Used by permission.

saved....my conception of it was that there isn't very much that could be done to alter a person's chances of surviving, once an atom bomb is dropped...[2]

While a positive and constructive response was made by many of the respondents, some reacted to the concrete information with an obvious rise in anxiety and recommended isolationism, while others responded with veiled aggression and proposed preventive war. One respondent said, "I am really afraid about that. Probably the only thing we can do is to hit them first, hit them real hard....We might be able to knock them out first". (Janis, 1951, p.239) Another recommended a different solution:

> We should stay out of the war. It was a mistake for us to go into Korea. We should give up the idea of trying to make money on other countries. People like MacArthur shouldn't be permitted to run this country. We should sit back and give up our interests in other countries; in that way we can stay out of war. Also, we have too many foreigners in this country. We have been too lenient with people coming here and should crack down on that...[3]

It will be evident that the above procedure has a powerful effect in arousing people. Indeed, it could boomerang if it evokes attitudes supporting drastic actions like adoption of preventive war, extreme isolationism, curbs against foreigners, and further stereotyping of other people. However, it should be possible to control and minimize such extreme reactions. The study reported by Janis was an investigation and was not designed to determine how people could be interested in appropriate preparation and training measures. It is not clear that the interviewers were known to the respondents, and viewed as respectable and credible informants. Moreover, the interviewers started with the nuclear threat, at the top of any fear hierarchy, rather than a lower level in terms of emergencies of every life, or natural disasters. Finally, they did not adapt their questions and information to each individual's past experience, present circumstances, and concerns. Appropriately planned and carried out, the risks with this method would probably be minimal. Nevertheless, it would be essential to pre-test the method thoroughly, and it undoubtedly would require much skill in the application.

It is noteworthy that the above method for interesting people in preparation for emergencies is much like the emotional inoculation procedure which Janis (1958) found so effective with a proportion of people who were about to undergo major surgery. Before the operation, these people were calm, indifferent, and undisturbed about the operation and its possible consequences; they seemed unaware of the possible disastrous consequences. After surgery, they tended to respond to the pain and other stresses and inconveniences in the post-operative treatment and confinement period with angry resentment, anxiety and depression. However, when they were prepared for the operation with an "emotional inoculation" in the form of an individual interview in which they were given realistic information and impressive warnings about what they would suffer and the related consequences, their negative post-operative reactions were markedly reduced.

The import of the two studies by Janis is that a proportion of people may be motivated to prepare for emergencies and inoculated against extreme psychological reactions in one process. It should be noted, however, that the method may be effective with that proportion of the population which tends to be calm and rather indifferent to the possibility and projected consequences of emergencies. Janis found that emotional inoculation did not work on individuals who were already anxious and disturbed in anticipation of the operation, and apparently a proportion of the respondents in his motivation study were also highly reactive to threatening information. On the other hand, investigations might reveal that group methods or systematic desentization (Wolpe, 1958) would also be effective with reactive or sensitized individuals.

Whichever of the three methods is used to recruit personnel, it is important to arouse positive motivation by offering incentives and to counter negative motivation by reducing cost factors. It is a fact of

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[2] ibid, p. 242.
[3] ibid, p. 240.

human nature that man tends to judge the attractiveness and value of opportunities, commitments, and actions in terms of their material and social consequences. If a commitment has high cost in terms of taking the time that a man would normally devote to his work, his family, his associations, and to leisurely pursuits, without adequate material, social and prestige compensations, he is unlikely to accept it. If it also costs him money, and entails inconvenience and special effort, it is not difficult to predict his choice. Even without reference to cost factors, human behaviour in a given endeavour can only be maintained with appropriate incentives and reinforcements. The long and the short of this is that it is necessary to reduce cost factors on the one hand and to offer positive reinforcements on the other.

The kind of compensation and reinforcement which will work will tend to vary from person, but the following are some of the more common possibilities. Adequate payment for time is an obvious and powerful inducement and this applies more than ever to the skilled technician and the professional man because of the current competition for their services. On the whole, one gets what one pays for and this is just one of the costs of having an effective organization. Other inducements that may be offered include the opportunity to learn saleable skills, paid trips to training conferences and to the sites of disasters, and provision for time off from one's job.

In addition to material inducements, social incentives and opportunities are persuasive sources of motivation: attention and recognition, social privileges and opportunities, influence, prestige and power, and the feeling of identification with a group or cause. One of the difficulties here is that the recognition which people value most is usually that which comes from their already well established reference groups, like their family, their professional organization, their peer group in the company or business for which they work, their religious group, or the associations of which they are members. Special measures would be required to complete with these sources of social reinforcement, such as recognition by high status members of the community, the cultivation of loyalty and morale in small group units, and, when appropriate, recognition on the community or even on the national level. It would be especially important to use publicity when an individual or task force has contributed to the handling of a real emergency. This would have the added advantage of enhancing the image of emergency units and personnel in the eyes of the public. Opportunities should also be cultivated for providing the informal satisfactions associated with "social" activities. However, these should be promoted judiciously because they can be artificial and strained if they are forced or developed prematurely.

Training

There are two main problems in any training program: First, it is essential to maintain trainees' participation, that is, to motivate them to keep coming to training sessions and taking an active part in the learning and practice processes. Second, there is the problem of how to maximize learning.

Maintaining Participation. The first problem, of maintaining participation, is largely a matter of the motivation and cost factors mentioned in the section on *Recruitment.* Motivation and interest are aroused by the offer and promise of incentives and opportunities. If we then make such incentives and opportunities contingent on certain kinds of behaviour, like arriving on time, doing lessons, practicing a task, and so on, we reinforce these behaviours and maintain them at a high level. Thus dealing with motivation in a way to maintain the desired behaviour is accomplished by offering and administering incentives and opportunities in the appropriate manner—by applying the principle of reinforcement.

The sorts of incentives and opportunities for which people work, play, and learn vary from individual to individual, so that it is important to get to know individuals who make up an organization. Sometimes we are not too aware of the inducements which are important to us as individuals, or at least we may deny that we do certain things for money, recognition, and social prestige. However, we can test the validity of the reinforcement principle by asking how long we, or the physician or policemen, would conti-

nue to perform in the customary manner if income was stopped and if no one paid any attention to him or what he is doing. In general, the sorts of incentives or reinforcers mentioned in the section on *Recruitment* will work for most people. In addition, personal rewards like the sense of achievement, the development of coping behaviour and self-confidence, the acquisition of saleable skills, and satisfaction of curiosity are important to many individuals.

While positive incentives are essential to maintain motivation, cost factors must also be handled or interest and motivation will fall off. In addition to cost factors mentioned in the last section, there is a special cost factor to which participants in emergency organizations may be subjected, namely, social harassment. They may be the butt of kidding, sly glances, remarks to the effect that they are scared, foolish influence and power, and they may find themselves being socially isolated in various ways. Members of our society are inclined to react in this manner towards new groups and movements, especially when they are not understood or if they arouse some apprehension. Such attitudes are only overcome when the movement includes appropriate status persons or a significant proportion of the population, or demonstrates functions which are relevant to the needs and concerns of the population.

This phenomenon and process was exhibited in Great Britain prior to and during World War II. Civil defence services were organized, right down to street wardens, some three years before the war. However, before the outbreak of hostility, wardens had come to be regarded with indifference at best and were also the object of some amusement, suspicion, and harassment. When the bombing started their careful selection and instructions quickly paid dividends: wardens faced danger without flinching and often ignored their own safety, they cared for the welfare of the people on their street, and they became the good neighbour and leader of their local districts. The attitudes which developed towards the warden are illustrated by the following quotations:

> ...In one household...When the siren went a wife asked her warden husband, as he put on his steel helmet, 'Don't we come first?' There followed, as he said, a spot of argument' until his little girl said, 'shooks, Mummy, let Daddy do his stuff.'[4]

A women warden reported:

> When sirens went and it was bad, if they couldn't hear my voice they used to get a bit panicky. When they heard me they were alright. They'd say, 'We can't hear B. — it must be bad'. Then I shout from one end of the street to the other, telling the children to get inside. That was my one consolation: Whatever I said was right, and the people would always do it. (ibid, p. 146).[5]

There are three ways to meet harassment. First, members of an organization should be pre-selected on the basis of their status and respectability among their fellows. This will not always be easy, because it is also essential that they have those skills and personal qualities which would enable them to be competent in a particular role within the organization. Second, they should be able to point, in concrete and relevant terms, to the opportunities and rewards which membership offers. Third, indifference and negative attitudes will dissolve if organization members demonstrate the value of their preparation and training in individual, family and larger emergencies. Any emergency measures program will ultimately be justified and acquire a positive image only be demonstrating its relevance and worth in concrete situations. This is one of the advantages of focusing on small emergencies and natural disasters—it provides the opportunity to justify the program and build a positive social image.

Maximizing Learning. It is not only important to maintain a high level of participation in an organization's program, it is also essential to use methods which will maximize learning. Three principles are important in this regard: the use of *reinforcement, appropriate presentation of information and tasks,* and *practice.*

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[4] From *Front Line: The official story of the Civil Defence of Great Britain.* British Information Service. London: H.M. Stationary Office, 1943. p.144. Used by permission.
[5] ibid, p. 146.

(1) Reinforcement is the first principle of learning. It involves the provision of positive feed-back and consequences for correct responses and negative consequences for wrong responses which are to be eliminated. The effective kinds of reinforcers are: (a) Information—that the response was right or wrong; (b) Positive consequences—in the form of social recognition, material rewards, special privileges, and so on; and (c) Negative consequences—in the form of loss of attention, of points, or some other symbolic value. The administration of the appropriate feed-back should be carried out in a natural and spontaneous manner, and with due consideration of the circumstances and the sensibilities of the individuals involved so that it does not produce negative reactions on the part of trainees.

(2) Appropriate presentation of material and tasks to be learned is the second principle for maximizing learning. There are two guides here. One is to start from where the individual is now, in terms of his personal experience and his presently available knowledge, skills, and behaviours. This is to say that information should be conveyed in words and language with which the individual is already familiar, that explanation of electrical circuits should start from simple ideas and phenomena of which the individual has some knowledge, and that medical information should be first conveyed in terms of what the individual has already experienced and learned. In terms of manual and other performance skills, the idea is to use those movements which the individual can already execute.

The second guide in presenting tasks or information to be learned is to elaborate the initial information or skills in a logical sequence, by successive approximations, and at a rate which the individual can absorb. This is to apply some of the principles used with teaching machines. Indeed, teaching machines may be very useful instruments for learning in certain phases of the training program, for instance when the language of a new area or technology is to be required. However, these should be used with caution because they may produce boredom and loss of motivation in some cases, and they often do not provide sufficient opportunity for the individual to stretch his mental muscles and grasp the whole principle or integrate several aspects of a problem with one insight. The problem is to program the sequence of information and tasks with the appropriate mixture and balance of gradualness and stretching. It may be wise to procure the services of psychologists or educationalists with special training in the area of learning and instruction. To illustrate what may be done, psychologists have been able to teach rats to "play" table tennis, to train pigeons to function as quality control "inspectors", to "educate" chimpanzees to do simple binary arithmatic, and to teach university students in such a way that very few get less than B grades (Goldiamond, 1965).

The traditional methods of teaching with lectures, seminars, group discussions, films, and case studies will still play a major part in any training program. Studies in which these methods have been compared have not clearly demonstrated that one is better than another. If improvement in the learning process is to be effected, the tactic is to arrange appropriate sequences within and between those methods on the one hand, and to require a high level of active practice by the appropriate use of motivation and reinforcement on the other.

A new method for teaching and training is "games with simulated environments" (Guetykow, 1962), and preliminary results of a study by Inbar (1965) indicate that the method may be very effective in training people for disasters. About eight players are seated around a table with a schematic map of a community on it. Each player is given a role in the simulated community together with his location at the beginning of the game, his job, his relatives and friends in the community, and eventually certain obligations and interests in the community. Players have pawns which they can move according to specified rules, and they "spend" energy units on the one hand and accumulate anxiety points on the other. Players may not communicate with one another unless they establish a line of communication on the board. The director of the game centralizes all moves on a special board. To start the game, players are told that a disaster has occurred in an unknown part of the community. The question is, what would they do.

Experience with such games indicates that they are powerful means of involving players in a problem in a very realistic way: they motivate, produce emotional reactions, lead to insights, and stimulate a sense of responsibility. Of the 256 players tested by Inbar (high school students, 4-H Club members, and managerial candidates), 83 per cent found it realistic or very realistic. The following is a sample of subjects' comments:

This game should be played by every citizen in the world. It gave us an opportunity to relive a situation which we may be faced with every day or someday in the near future.

Very good. It would like to take this back to Colorado. It would show people just what would happen in an emergency.

It was the best method of presenting this subject that I have ever attended.

We really experienced the panic and confusion of a catastrophe.

I thought it was very true to life in that much of what we have done in this game was basically the same as was done last June in the floods....

This all could have actually happened: although we don't hold these positions, we can realize what tremendous effort it takes to run them. I know now that people have to be organized if anyone expects to get anything accomplished.

It showed how everyone's first thoughts is for himself and how we should work for a community effort in order to accomplish more.

This shows problems that arise in a state of emergency: lack of organization, lack of a planned program.[6]

The majority of the subjects in the game learned some of the basic problems in disaster. The next step would be to allow them to prepare for an emergency by requesting certain agency and material resources and specialized training, then test their preparedness in another version of the game.

(3)   Practice is the third main principle of learning. Practice is vital for most forms of learning and performance, and most people know what it means. However, there is one variation of the practice method that enhances its value, and that is practice with correction. For example, in learning a lesson the idea is to go over it until you think you know it, write it out to test your learning, check for errors or omissions, then if it was not *completely* correct, write it out again. The same technique can be used in playing trainees work up a problem and present it orally: if there was any room for improvement in the oral presentation, schedule it again. Practice—also called rehearsal—points up problems, lack of understanding, gaps in knowledge and skills, and provides the opportunity to remedy these before going on to the next phase.

Practice is extremely important for the development of coordination and organization on the social level. To function as a smooth and efficient organization, the members of a group have to learn to behave in a predictable manner and to give others the appropriate cues so each knows what to expect of the other. Only by this means can their behaviour be coordinated and it usually takes considerable practice. Professional wrestling illustrates such social coordination. On a larger scale, and especially for emergency orga-

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[6] From *Dissertation proposal on a game simulating a community disaster and its implications for games with simulated environments.* Department of Social Relations, The John Hopkins University, 1965. pp. 21-23. Used by permission.

nizations which must deal with unpredictable disaster conditions, practice drills are essential, on small simulated problems and on a community—wide level.

Finally, it should be emphasized that each of the three principles of training cited here, reinforcement, presentation of information or tasks, and practice, is quite useless without the other two. Thus a training program must pay adequate attention to all three.

Organizational Preparation for Disaster

The main overall problem in disaster and in large scale emergencies is that the existing social system is severely disrupted, to the point of collapse. Survivors are stunned and dazed, disorganized or preoccupied with their immediate personal and family problems, and there is little coordination of efforts in handling these. Most studies have shown that even those persons and agencies whose training and role is to deal with emergencies get caught up in the confusion and urgency of a multitude of individual needs. This is nearly always the case with agencies from the impact zone, and even those which move in from outside typically have great difficulty in operating in an organized fashion. Thus priority objective of preparation and training for emergencies is adequate organization of the personnel and groups who will be responsible when disaster strikes.

Coordination of Services. A well organized operation requires coordination of agencies and personnel in carrying out the tasks at hand. In the case of emergency measures, this means integration of the efforts of the emergency, welfare and protective organizations of a community with appropriate division of labour and responsibility. Coordination between such groups is often woefully lacking—as illustrated in Chapter 4. It must be planned and rehearsed to be effective.

There are good reasons for drawing together and using existing emergency and service agencies in emergency measures organizations. They have personnel and ready-made organizations for dealing with particular aspects of disaster conditions; many of them have had considerable experience with various emergency situations; and most of them have required some authority in the public mind in their particular roles. However, the integration of such agencies in one overall organization will present difficulties. Existing emergency and service agencies have a life and identity of their own, and they will be loath to lose these in a merger. They will be apprehensive lest the functions on which they have built a tradition of service, which have earned them social respect, and for which they are justly proud, be divided up or taken over by other groups. The morale of personnel is intimately associated with their organization's history and tradition, and its unique roles and functions. When these are threatened, personnel may experience uncertainty and loss of morale. The unit organizations may be uneasy about their ability to recruit and hold new members if they become a mere part of a larger organization. Those that are largely supported by volunteers and financial contributions from the public may be concerned to maintain their image in order to retain such support. Unit organizations may misunderstand one another and clash because of their different structures, values, and objectives. There may be competition for influence and power, for prestige and the public. Jealousy and resentment may flare up between the "professional" and the novice, as unit agencies have doubts about the ability and competence of the new overall leaders. Finally, the leaders of the unit agencies will have a particular vested interest in maintaining their organization as a separate and identifiable social unit, because of the status, authority, and influence they have by virtue of their position in it.

The first step in dealing with the reservations and concerns of existing service agencies is to accept them as genuine, as based on real and legitimate fears. Then these may be discussed frankly, examined in detail, and means of meeting them explored in a spirit of mutual understanding. It may be quite feasible for an agency to retain the essentials of its identity and social image, perhaps in clearer focus, by concentrating on its main functions and not spreading itself too thin. In exercises and emergencies, each agency can be given special recognition within the overall organization and in the eyes of the public at large—it would be legitimate for the general director to publicize the role and contributions of unit organizations, whereas

the latter can hardly do this themselves. Moreover, an individual's organization's identity is often enhanced by being contrasted with the characteristics and functions of others. Such contrast, and appropriately planned competition for excellence, can contribute to the morale of personnel in the different organizations. Recruiting may be made easier by having selected and more sharply defined jobs and roles, and there could be reclassification and placement from unit within the general organization. In discussions and in exercises, different units can learn to appreciate one another, their values and methods in the light of their particular jobs. The informal and family-like structure of the Salvation Army with its accepting and benevolent attitude may be seen as appropriate to the kind of relief it offers, and the more authoritarian structure and stance of the police or army as suited to their control and protection role.

Problems of leadership may be especially difficult, but should yield to an approach that emphasizes consideration of the individual, his position and needs, together with the common overall objectives. Leaders of existing organizations should usually retain their leadership position. Their role may be expanded by drawing them together into a kind of directorate for the overall organization, where they could play an important part in planning, directing, and as consultants in determining policy and selecting executive officers. Another important problem which is often neglected is that of equitable pay and compensation for participation and service. This would have to be worked out in detail, with adequate consideration of the differing structures and values of the unit organizations.

Integration of services is always a difficult business. However, it can be accomplished without too much disruption if it is recognized that no one person or organization has a monopoly of competence, of the "best" means, or the most important functions; if due consideration is given to individual needs for recognition, status, and influence; and if there is adequate communication and consultation. Then the manner in which operational integration is attained will depend largely on collaborative planning and joint exercises. The role of joint exercises cannot be overemphasized. This turns up gaps and problems in planning, communication, lines of authority, and coordination. Exercises test the ability and competence of individuals and organizations, and they may be used to give recognition and to enhance morale. Finally, when individuals or groups become active in handling concrete problems and working toward common objectives, interpersonal differences often fade into the background.

The manner in which responsibility and tasks are allotted to unit agencies within an integrated organization should be guided by the priorities of the situation, and may cut across some of the traditional conceptions and roles of individual agencies. For most disasters, especially large-scale and nuclear ones, it would be desirable if reconnaisance and communication teams moved in first, with the specific purpose of determining the needs and problems, and of setting up a communication network with control posts and a field headquarters. The second wave might consist of rescue teams and firemen whose function is to carry out rescue, first aid, movement of casualties, and search tasks and to handle secondary threats from things like fire and broken gas mains respectively. The third phase of emergency assistance might then consist of moving in and establishing emergency health and welfare services. Such a phasing of the operation would facilitate the processes of caring for victims and establishing order and control. However, to implement an operation like this might well call for the integration of personnel and special groups from different agencies into the appropriate teams. This can only be accomplished by planning and rehearsal.

An important principle in the provision of organized assistance in disasters is that such assistance must usually come from outside the impact zone. Nearly all studies of natural disasters in North America indicate that survivors in the stricken area are practically unable to establish some overall organization for emergency measures. This would undoubtedly be the case in the event of a nuclear disaster. It follows that emergency organizations must be prepared to move into adjacent areas. Such an operation will be greatly facilitated if members of the organization are familiar with the physical and population characteristics of adjacent areas, have personnel and working acquaintance with emergency personnel there, and have practiced such a move in realistic exercises.

Authority and Responsibility. The problem of authority and responsibility in disasters is more than an academic question. In Canada, overall authority is vested at all times in the elected representatives at the three levels of government, national, provincial, and municipal. This is consistent with our democratic system. However, it places grave responsibilities on such officials; they may not be prepared for such responsibility, and people do not always respond to an authority simply because authority has been assigned.

Elected civic officials are usually chosen on the basis of qualities and experience which is far removed from the problems of disaster. Nevertheless, they will be responsible in the event of a disaster, for making decisions and directing the operation. However busy and preoccupied they may be with day-to-day matters of civic government, they must learn about and become familiar with and work with emergency plans and organizations. While they would in an actual disaster presumably work very closely with the director of the local emergency measures organization and rely on his advice for operational decisions, they must take responsibility for being fully informed and prepared for emergencies.

The other difficulty with elected representatives as the authority in disaster is that people have not acquired the habit of looking to them in most of the emergency situations they have experienced. Rather, they tend to look to that agency which typically handles different kinds of emergencies in community life. In the case of fire, they call the fire department; if their property or person is threatened, they call the police; and at least in the United States, they often look to the Red Cross as the ultimate authority in disaster because the Red Cross has developed this image through its history of work in such situations. The implication of all this is that designated authorities must develop and earn the appropriate image of authority and credibility in the public mind. Moreover, they must warrant this image in the eyes of the units and personnel of emergency organizations.

Communication. The crucial factor in the development and functioning of an effective organization is communication. Coordination and authority cannot be maintained without adequate communication. The technology of communication is available, but the human element is often given insufficient attention. Channels of communication should be specified together with the kind of information which will be transmitted. Messages should be acknowledged. There should be provision for the sorting, storing and re-transmission of information. Finally, there should be adequate opportunities for informal communication, especially when the organization is in the developmental stage and when personnel are not on the alert. Efficient communication requires planning and rehearsal like any other complex human endeavor.

Plans and Information

Any program of preparation for natural or nuclear disasters must include adequate attention to the collection and appropriate dissemination of three kinds of information: information on operational plans and procedures, on available resources of personnel, material and facilities, and on recommended protective behaviours. Without these kinds of information a community's response to disaster will be much less effective, both on the organizational and individual level.

Operational plans and procedures should be worked out in detail and be available to civic authorities and unit emergency organizations and personnel and to key personnel in other organizations that may have a role in disaster. The plan should be more than just a paper plan; key personnel should be familiar with the plan by study and by practice drills. It should include detailed information of the second kind, namely, that based on an inventory of available resources of personnel, supplies and facilities.

The manner in which an adequate plan for disaster can reduce the destructive consequences was illustrated when the strongest earthquake in 40 years struck the city of Niigata in Japan in June 1964. Over 17,000 houses were damaged or destroyed, almost all public utilities, means of communication and transport were completely disrupted, over 50 per cent of the land area of the city was flooded to a depth of 3 to 5

feet, 11,000 buildings were inundated, and one half of the population of 300,000 was directly affected by the earthquake, the floods, or the fires. However, only 11 persons were killed and about 120 injured.

The minimal consequence of this disaster, in terms of casualties, was probably attributable to the fact that a detailed master plan for disaster was available and well known (Quanrantelli, 1966). Japan is a country which has been subject to recurrent disasters. In the period 1951-1961 over 13,000 people were killed, some 450,000 houses destroyed, and over 5,000,000 homes flooded in 11 major typhoons and floods. As a result of this experience, the country has an elaborate disaster plan for all levels from the national to the local. Organizational division of labour is specified, usually along the lines of the tradional tasks of each organization. The activities of each organization are detailed, right down to the banking facilities which will be used in a disaster. As a result, there were few emergent groups and no problem of emergent and conflicting authority groups. There was no conflict between civilian and military authority, the former maintaining control throughout—although thousands of military personnel became involved in emergency measures. The master plan is detailed in contrast to most disaster plans in North American communities, which only offer general directions. Provision is made for the possibility of different kinds of disasters and emergencies. There are master lists of the amount and location of potentially needed equipment and supplies. The manner in which emergency actions are to be carried out are detailed, including how information is to be collected, stored, dispatched, and to whom. There is relatively little general convergence from the outside, and when people did come in, they typically worked within the framework and under the auspices of local organizations. Finally, there appeared to be wide-spread knowledge of the plan before the disaster.

The third kind of information which is an integral part of preparation for disaster covers the kinds of protective behaviour which are indicated in different situations. Such information would be especially important in the event of a nuclear disaster. In view of the many misconceptions about nuclear hazards, such information should be simple, concrete, and consistent. For example, the following facts should be widely publicized: That a person cannot "catch" radiation sickness from another, that most fallout rapidly loses its power to harm people, that you can see fallout, and that exposure to radiation does not necessarily produce sickness and death. The Canadian Department of Agriculture has booklets on protective measures with regard to food, water, plant life, and livestock. Publication lists of booklets and films are available from National and Provincial Emergency Measures Organizations, from the Canadian Emergency Measures College at Arnprior, Ontario, from the Department of National Health and Welfare in Ottawa, and from Provincial Departments involved in emergency planning.

Conclusions

This book would be incomplete if it stopped at this point. A central problem in dealing with emergencies, small and large, is that of developing a set of overall plans. This calls for more specialized information on the one hand and for social decisions on the other.

Every citizen has a responsibility to study the issues which face his society and nation, to collect as much relevant information as he can, to evaluate that information and make a judgement on it. However, the average citizen is seriously handicapped in many respects. He does not have access to much information, he is not always in a position to formulate an opinion and make decisions that take account of considerations on a national level, and his decision-making powers may be very limited. As a result, he must look to officials and members of government, from the local to the national level, to take special responsibility in facing the issues, getting and evaluating the relevant information, and making the indicated decisions—especially when the stakes involves society as a whole.

What are the chances of emergencies, from automobile accidents to nuclear disasters? Motor vehicle accidents in Canada in 1964 took the lives of 4,655 people, injured and maimed over 139,000 and caused damage to the money value of $117,635,000. Thus in ten years, more Canadians were killed on the roads in Canada than died in battle in the five years of World War II. This indicates that the chances of an emergency on the highway are fairly high. Granting this evaluation, what can the individual do about it? He may wear a seatbelt, have his car checked, and practise safe driving; but he can do very little indeed about the mechanical condition of other cars or about the driving habits of the thousands of other people whom he meets on the roads annually. It can only be concluded that men who are responsible to society must face the issue here.

What are the chances of a devastating earthquake, in Vancouver, or in Montreal? If the best available evidence is that these are high risk areas, certain decisions follow. One decision here might be to pass and enforce appropriate building regulations.

What are the chances of a nuclear war? It is difficult to avoid the conclusion that the probability of nuclear war is greater than zero. History does not give one reason to believe there will be no more war; the uneven development of various struggling masses of people around the earth is a source of unpredictable conflicts; and in some respects the major decisions for peace or war are out of our hands. Granting the possibility of nuclear war, then we are confronted with the responsibility to do something about it. Preparation is one sort of protective action that is called for. This book has emphasized preparation throughout. However, it is difficult to persuade the individual of the importance of preparation for nuclear emergencies, because of the unreality and improbability of such an event in terms of his daily experience, because of the cost and sacrifices involved in preparation and training, and because the individual's efforts must be supported on a wide scale to be effective. Preparation is a response to early warning. Our leaders are responsible for appropriate use of the warning process: that of getting, collating and evaluating the relevant information, the making of a decision about the probable risks, and the conveying of this information to the relevant groups of the population with recommendations for appropriate preparatory measures.

Are Canadians psychologically prepared to respond adequately even to the early warning of mounting international tension? History, role, and circumstances are important determinants of how an individual, group, or nation views events, of the kinds of decisions that are made, and of the behaviour that is produced. For example, a father will perceive more danger on seeing a prowler enter his house than will a passing stranger; he will make a decision oriented toward positive action and accept the risks, and he will go after the prowler—while the stranger may merely phone the police. Canada's history is that it has never been the aggressor in war. This history makes it unlikely that Canada would ever start a war. It means that the events and decisions leading to conflict would be in other hands. Nevertheless in the event of an international conflict—it is highly probable that we would be subject to nuclear explosions at the same time as, or before, the United States.

Democracy does not provide the most efficient means for making decisions. However, intelligent and responsible men can hardly deny the issues here and the elementary conclusions that

there is a chance of nuclear war, that preparation is essential, and that preventive measures should be taken. These two primary responses to the possibility of a large scale emergency, prevention and preparation, are not incompatible. Preparation is a form of insurance, in case preventive measures fail. But if in taking out "preparation" insurance we stopped preventive measures, all insurance would lapse. The person who takes out the insurance of buying a safety belt for his car does not stop obeying the rules of safe driving. Prevention and preparation are equally sound responses to the possibility of disaster, and one without the other makes little sense. The individual citizen and society must consider both, but prevention is more clearly a social responsibility.

In conclusion, apart from preventing a disaster or nuclear conflict, there is no substitute for preparation and training. It is not necessary that everybody be trained; the key is organization and adequate training of responsible personnel. It is persons with the appropriate skills, with clearly defined responsibilities, supported by adequate organizations, who will contribute most to survival.

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